Innovation in multinational companies

*Heterogeneity of innovative activity in
Telenor Group subsidiaries*

Elise Biørn-Hansen

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Faculty of Social Science

Centre for Technology, Innovation and Culture

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Abstract

The purpose of this thesis is to examine heterogeneity in innovative activity in geographical dispersed subsidiaries and the implications for innovation management.

The role of national entities of multinational companies (MNC) has received increasing interest by researchers and policymakers alike, as MNCs progressively have enabled innovative activity to transpire at national level, in countries where they operate. In parallel to MNCs increasingly internationalizing its innovation activities, subsidiaries roles in the development of innovations has gained more importance (Doz et al. 2014). Due to varying industry and firm structure, as well as social and cultural conditions, innovation occurs differently in different regions. Subsequently, it becomes valuable to understand how innovation takes place in subsidiaries operating in different regions. This is interesting to examine from a theoretical viewpoint because a substantial part of previous research has focused its explanations of heterogeneity on patterns common to industries or specific locations, not patterns *within* a company (Marin and Bell 2010).

The theoretical contribution to this field of study is to illuminate and better understand heterogeneity of innovative activity of the subsidiaries within one MNC, and the implications for innovation management. By gaining more insight related to how innovation is carried out in different subsidiaries, and subsequent implications, MNC management may gain a better understanding of innovative activity in geographically dispersed subsidiaries. This may contribute to an understanding of how corporate strategies and decision-making affect innovative activity at subsidiary level and vice versa.

This thesis builds on a case study of Telenor Group subsidiaries. Telenor Group is a major telecommunication operator company, with operations across the Nordic countries, Europe and Asia. The case study includes three geographical dispersed subsidiaries; Telenor Bulgaria, Telenor Pakistan and Canal Digital AS (Norway). A quantitative analysis of innovation expenditure examines innovation intensity in each subsidiary. The quantitative analysis forms the background of a qualitative study involving semi-structured interviews. This latter study explores creation, adoption and diffusion of innovation, and the degree of global integration and local responsiveness in the subsidiaries. The mixed-method approach - combining quantitative and qualitative methods in a way that creates synergetic effects, builds the case study of this master thesis.

The main findings indicate that there is inter-subsidiary heterogeneity of innovative activity in Telenor Group subsidiaries. The heterogeneity is materialized by differences in the intensity of innovative activity and innovation processes. The heterogeneity may be explained by variations in the innovations tasks of creation, adoption and diffusion. For instance high density of communication was found to positively affect the level of adoption and diffusion of innovation in the subsidiaries (Ghoshal and Bartlett 1988), further implying increased cost-efficiency for the subsidiary in question. Furthermore, it was found that heterogeneity of innovative activity might be explained by differences in the subsidiaries structural position in terms of global integration and local responsiveness. Based on a subsidiary comparison, a high level of global integration is found to enable economies of scale, whereas a high level of local responsiveness may lead to higher levels of innovative activity subsidiary level.

Specific characteristics of the subsidiaries may also create heterogeneity of innovative activity. Telenor Bulgaria is the most immature subsidiary of this study, implying a higher level of global integration in this case. A high degree of global integration is in itself associated with lower levels of local innovative activity (Marin and Bell 2005). Canal Digital has comparatively a lower level of global integration, due to its core activity (broadcasting) being outside the main activity of Telenor Group. This implies that it is less relevant for Canal Digital to adopt and diffuse innovations in Telenor Group, compelling this subsidiary to a larger extent to create its own innovations. One of the specific characteristics of Telenor Pakistan is its exercising of local autonomy in keeping a balance between being globally integrated and locally responsive. The findings indicate that Telenor Pakistan is the only subsidiary that has a high level of both structural positions. A high degree of global integration *and* local responsiveness in a subsidiary is associated with higher levels of innovative activity at the local subsidiary level (Marin and Bell 2005).

By gaining more insight related to subsidiaries conditions for innovation, how innovation is carried out in different subsidiaries and subsequent implications, policy makers may gain a better understanding of innovative activity by subsidiaries, at a national level. An increased understanding of the implications of heterogeneity may indicate how different policies may create different results.

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The thesis concludes six years of university studies and the master of Technology, Innovation and Culture at the University of Oslo. The process of writing this thesis has been both challenging and fulfilling. It has provided me with an extensive knowledge of, and an interest in the complex processes of innovation in multinational companies (MNCs).

In writing this master thesis over the course of the last year I have come to realize that I could not have completed this project without the support of others. First and foremost I wish to thank my supervisor Jarle Hildrum (RFS Telenor). His deep knowledge of innovation and insight into the complex processes of a multinational company like Telenor Group has been of great assistance. Jarle's constructive feedback and his ability to both motivate and challenge me, gave me with the confidence and drive to complete this master thesis.

Furthermore, I wish to express my gratitude to my informants. It is not always easy to come in contact with and have the opportunity to tap into the knowledge pool of people in senior positions in a MNC. I am very grateful that all my informant have shown a great interest in my work and shared their knowledge and experiences with me – without their contribution I would not have been able to answer the research questions.

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Abbreviations

CD	Canal Digital
CRM	Customer Relationship Management
HR	Human Resource Management
IS	Information System
IT	Information Technology
MNC	Multinational Company
R&D	Research and Development
RFS	Research and Future Studies
TB	Telenor Bulgaria
TP	Telenor Pakistan

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1.0 Introduction

This thesis explores heterogeneity of subsidiary's innovative activity in a multinational company (MNC). The role of national entities of MNCs has received increasing attention by researchers and policy makers due to the changing role of MNCs, regarding innovation activity at national level. A substantial portion of innovative activity in industrialized economies is now carried out by MNCs (Isaksen 1997 p. v). Thus, there is a clear tendency of MNCs to progressively fragment its value-chain activities, including research and development, across the regions in which it operates (Narula and Guimon 2009). Due to industry and firm structure, in addition to the specific social and cultural conditions, innovation occurs differently in different regions (Isaksen 1997 p. v). It therefore becomes valuable to understand how innovation takes place in subsidiaries operating in different regions, which this thesis is set out to do.

The purpose of this thesis is to uncover heterogeneity in innovative activities across subsidiaries in Telenor Group, and to understand the implications heterogeneity might have for innovation management. A case study approach will be used to examine three separate subsidiaries of Telenor Group - Telenor Pakistan, Telenor Bulgaria and Canal Digital AS (Telenor Broadcast). Telenor Group is a major telecommunication operator company, with operations across the Nordic countries, Europe and Asia. The subsidiaries of Telenor Group are highly geographically dispersed, operating in markets characterised by varying cultural, economic and political conditions. Due to the heterogeneity of markets this MNC operates in, and a high degree of local autonomy in Telenor Group subsidiaries, it is interesting to examine heterogeneity of innovative activity across Telenor Group subsidiaries. In order to study heterogeneity of innovation, it is also central to understand what innovation in a MNC is. Consequently there are three research questions set for this thesis:

1. What characterises innovation in a MNC?
2. How and why does innovative activities vary across subsidiaries within the same MNC?
3. What are the implications of inter-subsidiary variations with regards to being an innovative MNC?

Heterogeneity of innovative activity is an issue in the literature concerning innovation in MNCs. However, a large part of previous research has focused on patterns particular to specific industries, not differentiation patterns *within* corporations (Marin and Bell 2005). This thesis is based on two streams of literature, which may explain the characteristics of innovation in MNCs, inter-subsidiary heterogeneity of innovative activity and the potential implications it may cause.

Ghoshal and Bartlett (1988) suggest that innovation in MNCs is characterised by the innovation tasks of creation, adoption and diffusion. Heterogeneity of innovative activity is caused by variations on the organizational attributes of normative integration, density of internal communication, degree of local slack resources and local autonomy. The implications of inter-subsidiary heterogeneity from this stream of literature are suggested to be difficulties of implementing and enforcing a common strategic direction for MNCs subsidiaries. Furthermore, inter-subsidiary heterogeneity may make is more challenging for a MNC to enforce control mechanisms, such as normative integration, associated with higher levels of innovation (Ghoshal and Bartlett 1988).

Moreover, Marin and Bell (2010) suggests that innovation in MNCs are characterised by subsidiaries varying degrees of global integration and local responsiveness in a MNC. These variations affect the level innovative activities of the subsidiaries. The implications of varying degrees of global integration and local responsiveness may be an unequal balance between cost-efficiency and level of innovation in the subsidiaries.

The theoretical contribution to this field of study is to illuminate and better understand heterogeneity of innovative activity of the subsidiaries within one MNC. A further theoretical contribution toward is the literature concerning (innovation) management and MNCs. This thesis offers insight related to how innovation is carried out in different Telenor Group subsidiaries, and the implications for innovation management. This may contribute to an understanding of how corporate strategies and decision-making affect innovative activity at subsidiary level and vice versa.

This thesis also contributes to an academic debate concerning whether it is possible for a subsidiary to have a high level of global integration and a high level of local responsiveness. This is argued by some researchers (Peng 2009; Verbeke 2009) to be somewhat idealistic, by

claiming that in reality a MNC will have to make a choice between the two. This thesis will contribute to this debate by examining to whether Telenor Group subsidiaries only adhere of one of the dimensions, or if the subsidiaries may have a high level of both.

To answer the research questions this thesis is organized as follows:
In chapter two I will elaborate on the theoretical aspects I have chosen to focus on in answering the research questions, based on literature of innovation and literature concerning innovation in MNCs. This chapter will discuss what the literature identifies as characteristics of innovation in MNCs, and further how existing literature explain heterogeneity of innovative activity. Lastly, this chapter will explore what implications inter-subsidiary variation of innovative activity may have for a MNC.

In chapter three the methodology and data will be described. It discusses the mixed method research design, and how both quantitative and qualitative data has been collected and analysed to answer the research questions.

In chapter four present the empirical findings from both the quantitative and qualitative approaches, and further relate it to the theoretical framework outlined in chapter two.

Finally, chapter five answers and the research questions, and thereby concludes the quantitative and qualitative findings, before discussing theoretical contributions, and research – and policy implications are offered.

2.0   Theoretical framework

The objective of this thesis is to explore characteristics of innovation in Telenor Group, the heterogeneity of innovative activity in three Telenor Group subsidiaries, and subsequent implications for innovation management. This is interesting to examine from a theoretical viewpoint because a substantial part of previous research has focused its explanations of heterogeneity on patterns common to industries or specific locations, not patterns *within* a company (Marin and Bell 2010). The theoretical contribution of this thesis is to illuminate and better understand heterogeneity of innovative activity of the subsidiaries within one MNC, and the implications for innovation management.

To achieve the objective of this thesis, this chapter will present and discuss the theoretical framework of the analysis. First, this chapter will outline and discuss the definition of innovation and briefly review contributions of some influential researchers towards an understanding of innovation at firm level. Second, this chapter will examine the field of innovation in multinational companies and possible explanatory factors of inter-subsidiary variations of innovative activity. Lastly, this chapter will explore what implications inter-subsidiary variation of innovative activity may have for an MNC.

2.1   What is innovation?

As the main theme of this thesis is the heterogeneous and complex processes of innovation, it is of central importance to discuss what the concept of innovation actually is. The following section will discuss the definition of innovation, followed by section 2.1.1 that briefly discuss the understanding of innovation at firm level.

The work of Joseph Schumpeter has had a significant influence on the theories of innovation (OECD 2005) his definitions will therefore be the starting point of this chapter. Schumpeter defined 'innovation' as "*new combinations of existing resources*" (Fagerberg 2005 p. 6). This definition may further be categorized according to type. According to Fagerberg (2005 p.6) this includes "*new products, new methods of production, new sources of supply, the exploitation of new markets, and new ways of organizing business*".

Whereas Schumpeter provides a scientific and dynamic definition, Everett Rogers (1995 p. 11) present a sociological and more subjective definition of innovation, stating that: "*An innovation is an idea, practice, or object that is perceived as new by an individual or other unit of adoption*". Thus, whether an innovation is objectively new, as defined by time of first discovery, is not a central issue. Rather the perceived newness by the user determines if the idea, object or practise is an innovation or not.

One issue of fundamental importance to the definitions is what is actually meant by "new". What degree of novelty defines an innovation? According to Schumpeter the degree of novelty may be classified according to degree of deviation from current technology (Freeman and Soete 1997). This classification ranges from continuous improvements – 'incremental innovation' in contrast to more drastic changes – 'radical innovation' (Fagerberg 2005).

Degree of novelty in Rogers' definition is determined by the individual experience of newness, i.e. an innovation does not need to be objectively new. The novelty is a combination of knowledge of the innovation and the decision to adopt (Rogers 1995). Rogers concept of adoption is closely related to the Organization for Economic Co-Operation's (OECD) characteristic of innovation, which claims that the implementation i.e. the introduction to a market or a firms operations is what defines an innovation (OECD 2005). In addition, this is what separates inventions from innovations.

Moreover, it is central to understand why firms innovate. The foremost reason is to improve the firms' performance. The performance may be improved as a result of innovation by for instance increased efficiency and reduced costs, increased sales of exciting or new products or services and a higher demand and mark-up of price to mention a few. Through the effects described above, a firm may gain a competitive advantage over its competitors, as a result of innovation (OECD 2005).

This section has discussed how the concept of innovation may be understood. The following section will further discuss innovation and define innovation at firm level.

2.1.1 Innovation at firm level

This section will discuss the theoretical contributions of some influential researchers in the field of innovation studies. The researchers contributions have for instances formed the framework of the OECD's *"proposed guidelines for collecting and interpreting technological innovation data"* – the Oslo Manual. This includes the work of Schumpeter (Fagerberg 2005) and Rogers (1995) already discussed. Furthermore, this includes the work of Chris Freeman (1996; Freeman and Soete 1997), Bengt-Åke Lundvall (1992)**,** Richard R. Nelson (1993)**,** Nathan Rosenberg and Stephen Kline (1986). The work of these researchers is relevant for understanding the phenomenon of innovation at firm level. Furthermore, they are relevant to the researches questions, as they may indicate what kind of innovative activity one may expect to occur within a large multinational company (MNC).

Freeman (1996; Freeman and Soete 1997) critiqued the linear model of innovation that postulates that research is the starting point of any innovation process. Freeman's research demonstrated that the source of ideas and inventions may originate outside the formal R&D system and that the R&D in itself may or may not have a critical role in the development of an innovation (Fagerberg, Mowery and Nelson 2006).

Lundvall (1992) and Nelson (1993), two proponents of the 'systems of innovation' approach, have also critiqued the linear model of innovation. Lundvall (1992) and Nelson's (1993) research focus on external institutions influence on innovation activities at firm-level. This influence is examined through the transfer and diffusion of ideas, knowledge and skills and the channels through which this information is transferred. The channels are argued to be part of a cultural, political and social background that affects innovative capabilities and activities (OECD 2005 page 32-33). In the innovation system approach innovation is perceived as a dynamic process where the accumulation of knowledge is facilitated through learning and interaction. Thus, rejecting the linear model of innovation.

Kline and Rosenberg (1986) also rejected the linear model of innovation and developed the chain-linked model of innovation, which emphasizes three basic characteristics of innovation. First, the researchers claim that innovation is not a linear process. On the contrary, an innovation process consists of interaction and feedback loops throughout the knowledge creation process. Further, Kline and Rosenberg (1986) suggest that there are multiple inputs to the knowledge creation process. This may be seen in relation to the third aspect of

innovation – the claim that an innovation is not depended upon an invention process. Thus, basic research and formal R&D activities may be part of the problem solving phases of an innovation process, but does not play the role as the initiating factor of innovation.

Regarding what kind of innovative activity one may expect to occur at firm level in a MNC this section has discussed that firm level innovation is considered a dynamic learning process (Kline and Rosenberg 1986; Lundvall 1992; Nelson 1993). In a MNC one may therefore assume that innovation will be an iterative and dynamic process, thus not linear. Freeman's (1996) research demonstrated that the source of ideas and inventions may originate outside the formal R&D system and that R&D in itself may or may not have a critical role in the development of an innovation. This is in line with Kline and Rosenberg (1986), Lundvall (1992) and Nelson's (1993) rejection of the linear model of innovation. This means in relation to innovation in a MNC that there are likely to be multiple inputs to an innovation process and that basic research is not necessarily the starting point. However, basic research and formal R&D activities may be part of the problem solving phases of an innovation process, but does not necessarily play the role as the initiating factor of innovation (Kline and Rosenberg 1986). Furthermore, Lundvall (1992) and Nelson's (1993) view of the influence of external institutions on innovative activity may indicate first and foremost that a MNC's innovative activity does not happen isolated from its environment. It may further indicate that the innovative activity may differ as MNC subsidiaries operates in geographical different environments, with different social, cultural and political backgrounds that affect innovative activity.

It is not the purpose of this section to establish a particular model of innovation as definitive. The point, besides presenting a commonly held view of innovation at firm level, is to illustrate that innovation is a complex, diversified activity, consisting of several interacting components. Consequently, a study of innovation at firm level will have to reflect this.

Based on this theoretical background the OECD (2005 p. 46) has operationalized the definition of innovation at firm level, which is a follows:

> "*An innovation is the implementation of a new or significantly improved product (good or service), or process a new marketing method or a new organizational method in business practices, workplace organization or external relations*"

The OECD's broad definition of innovation captures a wide range of innovations. The minimum requirement of this definition is that the implemented product/service/ marketing or organizational method is new or significantly improved to the firm (OECD 2005). The point of view in this thesis falls within the scope of most firm-level innovation studies in industrialized economies. This view of innovation includes not merely R&D, but also a wide range of other activities such as organizational or marketing innovations. The output of innovative activities is not only global novelties reflected in patents, but also include a wide range of incremental changes novel to the industry or the firm itself. Further, in examining the process of innovation, it is interesting to not only focus on the input and output of innovation, but on other aspect as well (Marin and Bell 2010). Thus, this thesis take other aspects of the innovation processes into account, by examining a broader set of characteristics of innovation in multinational companies (MNCs) and by examining the heterogeneity of innovative activity across subsidiaries within one MNC.

As innovation has been defined, and the understanding of innovation at firm level has been discussed, the next section will discuss innovation in MNCs. Innovation in MNCs will be discussed both in relation to how some researchers characterises innovation in MNCs, and possible explanation of how and why subsidiaries' innovative activity within the same MNC varies.

2.2 Innovation and multinational companies (MNC)

The field of management of multinational subsidiaries[1] has over the past three decades emerged as a specific field of research. Broadly speaking there are four main streams of literature related to multinational management and subsidiaries (Paterson and Brock 2002). This section will briefly discuss these streams, before commencing to the two main theoretical approaches to innovation and MNC that will form the basis for the analysis. The following sections will address the two first research questions:

1. *What characterises innovation in a MNC?*
2. *How and why does innovation activities vary across subsidiaries within the same MNC?*

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[1] A subsidiary is defined as a company controlled by another company owning more than 50% of the common shares. A subsidiary is a corporation in it owns character and not a division of the controlling company (OECD 1993).

Paterson and Brock (2002) have in their review of literature identified four overarching streams of research; Strategy-Structure, Headquarter-Subsidiary Relationships, Subsidiary Roles, and Subsidiary Development.

The Strategy-Structure stream

The Strategy-Structure stream developed from initial work on organizational theories, in which a central issue was flexible organizational structures, as opposed to traditional hierarchies. Research in this stream included Bartlett and Ghoshal's (1989) 'transnational organization', that was advocated as an ideal structure for MNCs. The work of Bartlett and Ghoshal has since dominated this stream of research, and will be further discussed later in this section. Theories in this domain are based on the idea that organizational structure should be modified to fit strategy. The strategy itself is to be controlled by headquarter (Paterson and Brock 2002).

Headquarter-Subsidiary relationship stream

This stream of research has focused on centralization and formalization of decision making, in addition to the integration of subsidiaries towards the headquarters in a way that maximises their value to the parent company. Though somewhat in contrast to this focus, researchers adhering to this position were inclined to accept high levels of local autonomy of the subsidiaries. Thus, headquarters relied on high-quality relationships with its subsidiaries, and there might even be a need for involvement of the subsidiary management in decision-making (Paterson and Brock 2002). This stream also emphasis that many MNCs treated their subsidiaries as homogenous units, and formal control was hard to enforce due to the observed heterogeneity of subsidiaries. Furthermore, it was argued that the organizational culture should be altered to give room for 'friendly persuasion', in order to reduce a common 'us versus them' mentality of the headquarter-subsidiary relationship (Paterson and Brock 2002). The quality of communication was also emphasised as some researchers saw this as an important input factor to innovation (Ghoshal and Bartlett 1988).

The subsidiary role stream

According to Bartlett and Ghoshal (1986) the fact that subsidiaries have unique resources and that subsidiaries in some MNCs have high levels of autonomy imply that subsidiaries ought to have different roles within the MNC. Researcher such as White and Poynter (1984) extended this view by suggesting that subsidiaries were in need of different management practises, due

to the varying challenges subsidiaries met in its local environment. This stream of research shifted the focus and unit of analysis to the subsidiaries, and consequently it gave room for researchers to explore different strategic roles of subsidiaries. According to Paterson and Brock (2002), literature related to differences in the role of subsidiaries included both differences within the same country (Jarillo and Martinez 1990; Taggart 1997) and a specific MNC across countries (Gupta and Govindarajan 1991), which is the focus of this thesis.

The subsidiary development stream
According to Paterson and Brock (2002) this stream of research focus on balancing the relationship between headquarters' control and need for integration, with the subsidiaries need to respond to local market needs. The concept of subsidiaries growing based on its own business decisions, without involvement from headquarter, was first considered in this context by Prahalad and Doz (1981). This stream of research has a greater emphasis on the local environment each subsidiary operated in. Research within this stream includes exploration of subsidiaries roles, drivers of subsidiary development, and scepticism of subsidiary development (Paterson and Broke 2002).

The next sections will introduce two theories related to innovation in MNCs. These theories will create a framework in which the research questions concerning the characteristics of innovative activity in a MNC, and how and why innovation activities vary across subsidiaries, may be answered. The first theory is related to four organizational attributes and its effect on creation, adoption and diffusion of innovation throughout a MNC. This theory is situated in the subsidiary role stream of the literature, which maintain that subsidiaries should have different roles within a MNC due to the unique resources and potential autonomy the subsidiaries possess. This theory also bears elements of the headquarter-subsidiary relationship stream that amongst other things focuses on the quality of relations between headquarter and subsidiary, with focus on autonomy and communication as an aid to innovation. The second line of theories originates from the strategy-structure stream, which emphasizes the need for flexible organizational structures as opposed to the traditional organizational hierarchy.

2.2.1 Creation, adoption and diffusion of innovation.

This section will discuss the creation, adoption and diffusion of innovations in MNCs.
The discussion will centre on the link between four organizational attributes and subsidiaries
innovative activity.

According to Ghoshal and Bartlett (1988) subsidiaries conduct tasks in various processes
through which innovations are created, adopted and diffused in MNCs. Subsidiaries may
create or adopt innovations locally, by utilizing their own resources to respond to local
customer needs and conditions. Ghoshal and Bartlett (1988) termed this process "creation".
Subsidiaries effectiveness in creating local innovations is a central element in a MNC's ability
to respond to local market needs in different operating environments. Further, subsidiaries
may adopt innovation created by either the parent company or by other subsidiaries. The
processes of "adoption" and the efficiency of subsidiaries in conducting this task is critical to
a MNC's ability to practicing a global integrated strategy. Furthermore, an innovation created
by a subsidiary may be required to be diffused to either the parent company or other
subsidiaries. The processes of "diffusion" and the ability to facilitate it, enables the MNC to
exploit economies of scope related to the learning embedded in geographical dispersed
operations.

Ghoshal and Bartlett (1987; 1988) identified four organizational attributes that are linked to a
MNC's ability to create, adopt and diffuse innovation. The four organizational attributes are:
the degree of local slack resources, local autonomy, normative integration and density of
internal communication. The degree of local slack resources refers to the extent that
organizational assets and resources such as R&D and manufacturing are centralized (lower
level of local resources) or decentralized (higher level of local resources). Local autonomy
refers to whether the decision-making authority is centralized to the parent company, or
decentralized to the subsidiaries. Normative integration is related to the extent of which a
subsidiary is integrated with the parent company, in terms of sharing strategy, goals and
values. Lastly, internal communication refers to density communication both within the
subsidiary and between the subsidiary and the parent company.

The study of Ghoshal and Bartlett (1988) found that normative integration and a high degree
of internal communication was positively associated with all three innovation tasks, i.e.
creation, adoption and diffusion. For one, the number of innovations increased with the

degree of normative integration because shared goals and values motivates a subsidiary to be entrepreneurial. Furthermore, the normative integration led the parent company to be more responsive to subsidiary needs. Closely related to integration is communication. The study found that the subsidiaries with the highest number of innovations were those that had a higher degree of internal communication. The degree of communication reflects a subsidiary integration with the parent company, and this integration is central to innovation. The researchers suggest that subsidiaries adoption of centrally created innovation is dependent upon the density of subsidiary-parent company communication. Adoption and diffusion of innovation between subsidiaries will further depend on the communications between them.

The findings of Ghoshal and Bartlett's (1988) study were not as conclusive with regard to local autonomy and local resources. The findings suggest that local resources may lead to increased creation and diffusion of innovation at the local subsidiary level. The study was not able to draw any conclusion regarding local autonomy. However, Ghoshal and Bartlett (1988) suggest that the inconsistency of results on this attribute may be explained by the assumption that the effects of the four organizational attributes on innovation are arbitrated by the degree of normative integration in the MNC. This is because a parent company -subsidiaries relationship is represented by a set of mixed motives, wherein the subsidiaries and the parent company may have common and conflicting interests. Consequently, a higher degree of normative integration and communication may put less emphasis on the conflicting interests, and therefore lead to an increased participation in innovation tasks that benefit the whole corporation. The lack of normative integration may on the other hand intensify conflicting interests, wherein the degree of local autonomy and resources may even have a negative impact on the innovation tasks.

This section has discussed the concept of creation, adoption and diffusion of innovation, in relation to the four organizational attributes of local resources, local autonomy, normative integration and internal communication. Whereas the latter two has a positive association with all three innovation tasks, a high degree of the former two will increase creation and diffusion of innovation but impede adoption of innovation.

The following section will turn attention towards a subsidiary's structural position in the MNC and how this may characterize and affect their innovative activities[2].

2.2.2 Subsidiaries structural position in a MNC

As noted in the review of subsidiary management literature, the strategy-structure stream focused on flexible organizational structures, as opposed to the more traditional organizational hierarchy (Paterson and Brock 2002). The merit of globalization and localization has been a central theme in strategic management literature, and represents two dimensions that a MNC might build a more flexible structure on (Meyer and Su 2011). In the late 1980s and early 1990s scholars such as Prahalad and Doz (1987) and Bartlett and Ghoshal (1989) initiated a systematic exploration of MNC strategies based on the dimensions of global integration and local responsiveness. This investigation was further developed to the creation of MNC typologies.

This section will discuss a MNC typology based on the dimensions of global integration and local responsiveness. First, the pressure for global integration and local responsiveness in the telecommunications industry and how this may create a need for innovation on two different levels of an MNC will be explored. Second, the discussion will be centred around the link between a subsidiary's structural position on these dimension and how that affects a subsidiary's innovative activity. Subsequently, this section will discuss the characteristics of innovative activity of subsidiaries within this theoretical framework and apply that as an explanatory factor of how and why subsidiaries may vary with regards to its innovation activity.

The basic premise of MNC typologies is the assumption of the existence of different types of MNCs. Further, most of these typologies implicitly or explicitly suggests a continuum of *integration/coordination/globalization* versus *differentiation/responsiveness/localization* in describing a MNC's strategy (Harzing p. 103). One such typology of MNCs is that of Bartlett and Ghoshal (1989). Their typology – 'the transnational model' illustrates the relationship between the subsidiaries, the corporation and the surrounding environment (Doz et al. 2014). The transnational model is based on a combination or degree of local responsiveness and global integration of a subsidiary.

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[2] Innovative activities are defined as "*all scientific, technological, organizational, financial and commercial steps which actually, or are intended to, lead to the implementation of innovations*" (OECD 2005).

Local responsiveness refers to sensitivity and responsiveness to national differences. Consumers, national infrastructure, competitive environment and host country government requirements are some of the factors that may differ country by country. The extent to which a subsidiary respond to these differences, by way of adapting offerings, production and R&D located close to the customer, determines its degree of local responsiveness (Harzing 2000; Bartlett and Ghoshal 1998).

Global integration refers to forces requiring companies to integrate and coordinate across national borders. These forces may include the emergence of regional blocks, technological advances or competitive dynamics that alters the structure of industries (Bartlett and Ghoshal 1998). Subsequently, there are conflicting sources both pulling the MNC toward being globally integrated, at the same time requiring the MNC to be sensitive to local differences and preferences.

The telecommunications industry, which is the basis of this thesis, is an industry characterized by high pressure for local responsiveness and global integration (Birknik 2007). In terms of local responsiveness there are three main forces. First, given that mobile communication is a service industry – there is a drive towards localization of the customer experience. Further, the general tendency for the telecommunications industry is that it is a highly regulated industry. Consequently, the need for local responsiveness derives from the need to buy licenses and spectrums from the local government, under conditions that may vary from country to country. Finally, numerous telecommunication markets has in the past decades been opened up for competition – the competition has traditionally been between domestic/multi-domestic players that subsequently have given rise to great variation in local value propositions, strengthening the need for local responsiveness (Birnik 2007).

On the other side there is a drive towards global integration. The telecommunication industry is due to the need of building system infrastructure and networks, characterized by high capital expenditures (Birnik 2007). The high capital intensity equals to a higher threshold of profitable operations. Furthermore, the global telecommunications standards enable economies of scope, scale and synergetic effects – all driving the design of networks and systems, product and service development, as well as procurement towards global integration. Lastly, the indispensability of mobile communications for businesses and private consumer both, has led the consumers to require that the services are of high quality – also during international travels. Ensuring a high quality of voice and data services is increasingly a

priority of telecommunication providers, and this becomes less challenging with global integration of operations (Birnik 2007).

The telecommunications industry is a dynamic industry, characterized by intense competition (Evans 2014). It is further characterised by high investments in infrastructure and other technological development, therefore making it necessary for companies in the telecommunications industry to be cost efficient and leverage economies of scale. The previous sections also discussed the need for local responsiveness due to varying local market conditions and localization of the customer experience. Consequently, there is a need to be innovative for companies in the telecommunications industry. The need to be innovative may not only be derived from the pressure of global integration and local responsiveness in the telecommunications industry, it may also be tied to the reason as to why companies innovate. As noted in chapter 2.1 companies innovate to improve performance, for instance through decreased costs, or increased sales or price as a result of innovation (OECD 2005). The need for innovation may be present on two levels in a MNC operating in the telecommunications industry. There is a need for innovation at the parent company level, materialized in the development of infrastructure, network and systems, product and services development to enable economies of scale and scope and thus ensuring cost efficient operations. On the other hand, the varying market conditions and the varying needs of the customers creates a need for innovation at the local level of the national subsidiaries. These innovations are critical to satisfy local market needs (Ghoshal and Bartlett 1988), and may also lead to increased sales or an mark-up of price. (OECD 2005).

This section has discussed that pressures of global integration and local responsiveness create a need of innovation on two different levels in a MNC in the telecommunications industry. The question then becomes whether it is possible to satisfy both these needs at the same time.

Prahalad and Doz (1987) challenged the notion of treating global integration and local responsiveness as poles, suggesting that the two approaches may be combined –given the right organizational structure. Prahalad and Doz (1987) defined the concept of a 'multi-focal' corporation – i.e. a corporation that is locally responsive and globally integrated at the same time. Bartlett and Ghoshal (1987) advanced on this idea, and developed four strategies; the International (combining low local responsiveness and low global integration), Multinational (combining high local responsiveness and low global integration), Global (combines high global integration with low local responsiveness) and Transnational (combines high local

responsiveness with high global integration). Thus, a subsidiaries degree of global integration and local responsiveness, defines its structural position in a MNC.

The typology of Bartlett and Ghoshal (1989) involves all aspects of headquarter-subsidiary relationships. Subsequently the application of either a local responsiveness – or a global integration strategy - will have implications for company-wide functionalities such as human resource management (Kim and Gray 2005; Fenton-O'Creevy, Gooderham and Nordhaug 2008), IT structure (Maniwani and O'keefe 2003) and innovation activity (Marin and Bell 2010).

2.2.3 Subsidiaries structural position and innovative activity

In relation to innovative activity, a study by Marin and Bell (2005) concerns the relationship between the subsidiaries structural positions (i.e. global integration and/or local responsiveness) and the subsidiaries innovative activity.

This study dealt with the technological capabilities and innovative activities of MNC subsidiaries in industrialized economies (Marin and Bell 2005). One issue in this research was the question of '*what could explain the heterogeneity of innovative activity by the MNC?*' (Marin and Bell 2005 p. 2). Based on their previous research Marin and Bell (2005) refrained from a common perception of explaining heterogeneity of innovative activity in a MNC by differences in inherent 'technology-intensity' of broad groups of industries. That being disqualified as an explanation of heterogeneity in subsidiaries innovative activities, the researchers claim that there is a scarcity of other explanations in literature (Marin and Bell 2005). The lack of alternative explanations is somewhat remarkable, given the extensive body of literature about the location of MNC innovative activities and MNC strategies (Marin and Bell 2005 p. 2, i.e. Nobel and Birkinshaw 1998; Pearce 1999; Kuemmerle 1999; Zander 1999; Kumar 2001; von Zedwitz and Gassman 2002). Although not the main concern there is a significant amount of literature on subsidiary strategy, -development and –autonomy that has also considered subsidiaries innovative activities (Marin and Bell 2005 p. 2, i.e. Ghoshal and Bartlett 1988; Birkinshaw et al 1998; Taggart and Hood 1999; Birkinshaw and Hood 2000; Andersson et al. 2001). Marin and Bell (2005) point out that a considerable amount of previous research has focus on patterns particular to specific industries, not differentiation patterns *within* industries.

Marin and Bell (2005) shifted their focus in finding an explanation of heterogeneity in innovative activity from that of host country environment to the subsidiaries structural position within the organization. More specifically the focus shifted to include a distinction based on studies like Doz and Prahalad (1984), Porter (1986), Bartlett (1986) and Barlett and Ghoshal (1989). This distinction is between two corporate structures already discussed – global integration and local responsiveness. The study of Marin and Bell (2005) used CIS survey data[3] and combined innovation indicators to identify subsidiaries of MNCs with different structural positions in terms of local and/or global integration. The study found that the groups identified significantly differed in terms of their innovative activity. This difference was materialized in different combination of the structural positions outlined above.

According to Marin and Bell (2005) a common expectation is that a high degree of global integration leads subsidiaries to relativity lower levels of innovative activity (for instance argued by Jarillo and Martinzes 1990). Contrary to this view, Marin and Bell's (2005) study found that subsidiaries that were highly integrated into its parent company (i.e. high levels of global integration) commenced in more, rather than less, intensive innovative activity, compared to subsidiaries that only maintained a high level of local responsiveness (Marin and Bell 2010).

The study further found that some subsidiaries occupied what they called the "dually integrated" position, i.e. high global integration *and* high local responsiveness, indicating that these positions are not alternatives, but complementary (Marin and Bell 2005). This is in contrast to recent work (Peng 2009; Verbeke 2009) that suggests that a high degree of global integration *and* local responsiveness is somewhat idealistic and that in reality most companies will have to make a choice between the two (Meyer and Su 2011). This thesis will contribute to this field of research and debate by examining to what extent three Telenor Group subsidiaries holds one or a combination of the structural positions.

This chapter has thus far discussed issues regarding the characteristics of innovation in MNC and factors that may explain subsidiaries heterogeneity of innovation activity. Innovation in MNCs is characterised by three different innovation tasks; creation, adoption and diffusion. Innovation in telecommunication operating MNCs is further characterised by pressures of

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[3] The Community Innovation Survey (CIS) is a survey of innovation activity in enterprises. Surveys are carried out with two years' frequency by EU member states and number of ESS member countries. (Eurostat 2013)
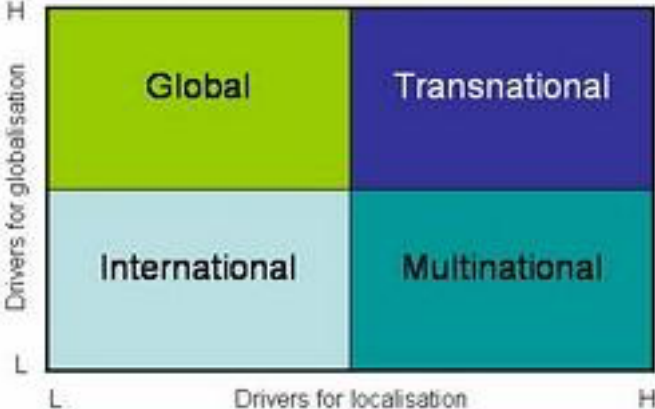
global integration and local responsiveness. The innovative activity of subsidiaries is heterogeneous because of varying degrees of local resources, local autonomy, normative integration and density of internal communication. Furthermore, the variations of innovative activity are explained by a subsidiary's structural position in a MNC. Thus, the combination of global integration and local responsiveness affect the level of a subsidiary's innovative activity. As the characteristics and variations have been theoretically examined, the question of what implications inter-subsidiary variation has for innovation management in a MNC arises. The next section will discuss potential implications from a theoretical perspective.

2.4 Implications of inter-subsidiary variation

This section will address the third research question: *What are the implications of inter-subsidiary variation with regards to being an innovative MNC?* This research question will be discussed in relation to an extension of the theories introduced earlier in this chapter, and is organized as follows. First, it discusses Bartlett and Ghoshal's (1987) strategy matrix based on the dimension of global integration and local responsiveness. Further, it will discuss the implications of choosing one of these strategies over the others, and the implications of implementing different strategies in different subsidiaries.

The concept of global integration and local responsiveness has already been discussed in chapter 2.2.3. It has also been noted that Prahalad and Doz (1987) defined the concept of a 'multi-focal' corporation – i.e. a corporation that is locally responsive and globally integrated at the same time. Bartlett and Ghoshal (1987) advanced on this idea, and developed a 2x2 strategy matrix based on these dimensions. The matrix consists of four strategies; the International, Multinational, Global and Transnational.

Figure 1.1 Integration – Responsiveness framework.

Adapted from Bartlett and Ghoshal 1987

International firms are characterised by combining low local responsiveness and low global integration. The international strategy was not part of the original classification in Bartlett's (1986) research. Several researchers have not included this category in empirical studies. Researchers that have included the category, have experienced difficulties in empirically distinguishing this category from the others (Harzing 2000). Therefore the international firm will not be further discussed in this thesis.

Global firms are characterized by combining high global integration with low local responsiveness. The global firm is further defined as *"building cost advantages through realization of economies of scale"* (Harzing 2000 p. 107). The structure in a global firm is centralized and focused on a global scale; consequently, the role of the subsidiaries is the implementation of the strategies of the parent company, in reality meaning that a subsidiary becomes a 'pipeline' of products and services from the parent company (Bartlett and Ghoshal 1989; 1992; Harzing 2000 p. 107).

The Multinational firm is characterized by combining high local responsiveness and low global integration, and its main strategic mandate is defined as "*to respond to national differences*" (Harzing 2000 p. 107). Subsequently, the multinational firm is associated with being decentralized and having a more flexible organizational structure (Bartlett and Ghoshal 1989; 1992).

The transnational firms are characterized by combining high local responsiveness with high global integration. The transnational firms have to cope with pressures for both global integration and local responsiveness (Bartlett and Ghoshal 1987). This is a characteristic of the telecommunications industry, as discussed in chapter 2.2.2. The strategy of the transnational firm is a combination of the global and multinational firms, thus being both centralized and decentralized, and focusing both on a global scale and responding to national differences. However, there are some unique features of the transnational strategy, regarding the flow of products, services, people and information. In these types of firms it is expected that there is an extensive flow *between* subsidiaries (Bartlett and Ghoshal 1989; 1992). In comparison the global firm the flow is expected to run from the parent company to the subsidiary, in multinational firms it is expected that the overall flow is lower (Harzing 2000).

As the characteristics of the strategies have been discussed, the following sections will discuss the implications of choosing one strategy over the other, in terms of being an innovative

MNC. The discussion about being an innovative MNC will also include consideration of cost-efficiency. Cost-efficiency is sometimes considered to be the opposite dimension of innovation (Marchal 2010). Though this view may be reflected by some of the strategies that will be outlined in the next section, the discussion will also indicate that cost-efficiency and high level of innovation may be combined in one strategy.

Implications of choosing one strategy over the other
In terms of choosing one strategy over the other, the global strategy would imply that a MNC gains a cost advantage through economies of scale (Bartlett and Ghoshal 1989; 1992). As this strategy focus on global scale and centralization, it is likely that the innovativeness of the subsidiaries is lower as the subsidiaries is merely a pipeline of the parent company's products and services. Choosing this strategy will be at the expense of products and services adapted to the local market needs (Harzing 2000). It may in this regard also be discussed whether MNC pursuing a global strategy may experience a lower innovation success, as global scale is conducted at the expense of satisfying local user needs. On the other hand there may be MNCs that offer standardized products (such as computers), in which such a strategy may make more sense. (Harzing 2000).

The multinational strategy may imply a higher level of innovation at the subsidiary level, as innovations are created to suit the local market needs that the subsidiary operates in. The multinational firm does not focus on global scale; therefore, MNCs in this category will have less cost efficiency as the MNCs do not leverage economies of scale (Bartlett and Ghoshal 1989; 1992).

Lastly, pursuing a transnational strategy implies cost efficiency as the strategy concentrate on a global scale, thus enabling economies of scale for instance through centralizing functions or offering standardized products and services. This strategy further implies a higher degree of innovative activity as the structure is flexible enough to allow both the subsidiary to adapt innovations from the parent company to their local market needs, and because this structure enables the local subsidiaries to create innovations themselves. The transnational strategy may be considered in relation to the earlier discussed study by Marin and Bell (2005). The study suggests that a transnational strategy is associated with a high degree of global integration and a high degree of local responsiveness. The result of Marin and Bell's (2005) study argues that a high degree of integration and local responsiveness, leads to a higher level of local

innovative activity. Thus, a transnational strategy might increase the overall innovativeness of a MNC.

As the implications of choosing one strategy over the other have been outlined, the next section will discuss the implication in terms of the subsidiaries within the same MNC having different strategies.

Implications of inter-subsidiary variation
Meyer and Su (2011) suggests that the strategy a subsidiary pursue co-determined at the local level and thus not only a result of decision making at the headquarter level. This means that the actual strategy at the local subsidiary level is likely to vary. If one adopts the suggestion of Meyer and Su (2011) and assume that the actual strategy of MNC's subsidiaries vary across locations, it may imply difficulties for Telenor Group in establishing a common strategic direction for the subsidiaries (Shutte 1997). Thus, one subsidiary may have implemented a strategy that aims at global scale and cost-efficiency, whereas another may have implement a strategy aiming at satisfying local customer needs by creating and adapting products at the local level. Local variation implies that it may be challenging to set one strategy direction for the MNC (Shutte 1997). The lack of a common strategic direction for a MNC's subsidiaries may negatively affect the innovativeness and cost-efficiency of the MNC as a whole, if the subsidiaries do not work towards the same goal.

Furthermore, if there are variations in the actual strategy implemented by the subsidiaries, it may make it more challenging to enforce the control mechanisms or organizational attributes of normative integration, local autonomy, local resources and communication (Ghoshal and Bartlett 1988), already discussed. If for instance enforcing normative integration becomes difficult, it may decrease the level of creation, adoption and diffusion of innovation in a MNC (Ghoshal and Bartlett 1988). Thus, variations in the implemented strategy of subsidiaries may make it more challenging to enforce control mechanisms that are positivity associated with the level of innovation in the subsidiaries.

Disturbing the flow
Furthermore, a variation in subsidiary strategy may disturb or stop a flow of products, services, people and information (Harzing 2000). A transnational structure is associated with a flow *between* the subsidiaries, a global structure is associated with the flow going form the parent company to the subsidiary and a multinational structure is associated with an overall

lower flow (Harzing 2000). If a MNC has subsidiaries with different patterns of flow it may become challenging to cooperate across subsidiaries. Further, it may decrease the rate of adoption and diffusion of innovation. If a subsidiary in reality operates with a global structure, it will be less likely to adopt innovations created by other subsidiaries, and diffuse its innovation to other subsidiaries. In either case it would have to be mediated by the parent company (Bartlett and Ghoshal 1989; 1992). If a subsidiary operates with a multinational structure it is likely that there is less activity in all the three innovations tasks of creation, adoption and diffusion. On the other hand if a subsidiary has a transnational structure it is likely that it would enhance the flow, thus increase diffusion and adoption, at least amongst the subsidiaries adhering to the same structural position (Bartlett and Ghoshal 1989; 1992, Harzing 2000).

2.5 Summary

The literature reviewed in this section may give some indications to the answer to the research questions.

What characterises innovation in a MNC?

According to Ghoshal and Bartlett (1988) innovation in MNCs is characterized by the tasks of creation, adoption and diffusion. These three innovation tasks are one factor that differentiates innovation in a MNC as opposed to innovation in a single national corporation. Creation, adoption and diffusion of innovation are influenced by local resources and local autonomy, in which a higher degree of both these attributes may lead to a higher degree of creation and diffusion of innovation, but a lower degree of adoption of innovations. Moreover, a higher degree of normative integration and internal communication is positively associated with all three innovation tasks.

Further, innovation in a MNC may be characterized by a combination of the structural positions of global integration and local responsiveness, which affect the innovation activity of the subsidiaries (Marin and Bell 2005). Thus, the innovation is characterized by a combination of adopting standardizes product, services and solutions from headquarter, and creating and diffusing local innovations or changing adopted innovations to satisfy local market needs. It has been argued that it is a strong drive for the transnational strategy i.e. combining high global integration and high local responsiveness, in the telecommunications

industry (Birkin 2007). Literature presented in this chapter maintain that the degree of global integration/local responsiveness is a result of decision-making at both headquarter and subsidiary level, subsequently increasing the chance of variations on these structural position across different locations (Meyer and Su 2010).

The literature may also give some indications on the answer to the second research question: *How and why does innovative activity vary across subsidiaries within the same MNC?*

Considering the work of Ghoshal and Bartlett (1988) innovation across subsidiaries within the same MNC might vary by the performance on the three innovation tasks; creation, adoption and diffusion. Furthermore, to explain the variation in performance on the innovation tasks, one may look towards the four organizational attributes. Subsidiaries with a higher degree of local slack resources will to a larger extent create and diffuse innovation. However, a higher degree of local slack resources will decrease adoption of innovations due to the "not-invented-here" syndrome. It will impede adoption of innovation because local resources may fund local market activities in which the subsidiary is likely to identify reasons and needs in their market for why innovation created elsewhere is not relevant for them. The same line of arguments is valid for local autonomy. A high level of local autonomy will increase creation and diffusion of innovation as freedom to experiment is considered a prerequisite for innovation. Further, local creation of innovation is a prerequisite for a subsidiaries diffusion of innovation. However, local autonomy impedes adoption of innovation, if local autonomy is considered to obverse of centralization. Moreover, a higher degree of normative integration will increase the rate of all three innovation tasks. Likewise the density of internal communication will positively affect the innovation tasks. Creation of innovation is increasing by higher levels of communication with the parent company. In the same manner is adoption and diffusion of innovation increasing with a higher density of communication between the subsidiaries.

Marin and Bell's (2005) research might also offer some suggestive theoretical answers to the second research question. Marin and Bell's (2005; 2010) research has been an attempt to fill a gap in the existing literature concerning heterogeneity in subsidiaries innovative activities. A significant amount of previous research has focus on patterns particular to specific industries, not differentiation patterns *within* industries, or *within* corporations, in which this thesis makes a contribution.

Marin and Bell's (2005) work suggest that the subsidiaries will vary in their innovative activity because of the structural position a subsidiary holds in a MNC. The variations in structural position further impact the degree of innovation activity in the subsidiaries. Marin and Bell's (2005) study found that subsidiaries adhering to the different structural positions significantly differed in their innovative activity. These finding are supported by the earlier study by Bartlett and Ghoshal's (1989) 'transnational model' which is a strategy matrix based on a subsidiaries degree of global integration and local responsiveness.

Lastly, this theoretical chapter has addressed the third research question: *What are the implications of inter-subsidiary variation with regards to being an innovative MNC?* This chapter has discussed the implications for a MNC in terms of choosing one of the strategies derived from Bartlett and Ghoshal's (1989) integration-responsiveness framework, over the other. The global structure is associated with cost-efficiency due to the potential of economies of scale. The multinational structure on the other hand is associated with higher innovativeness at the local subsidiary level. Lastly, the transnational model being a combination of the other two structures is associated with cost-efficiency and a higher level of innovativeness.

The implications have also been discussed in terms of inter-subsidiary variation of the actual implemented strategy at subsidiary level. Such variation may imply that it becomes more challenging to enforce control mechanisms, and more challenging to implement a common strategic direction for the whole MNC, subsequently it may become harder to reach the goals for the parent company. Furthermore, an implication may be that variation in subsidiary strategy may disturb or stop a flow of products, services, people and information. Disturbing this flow might have a negative impact on the innovation tasks of creating, adopting and diffusing innovation throughout the MNC (Ghoshal and Bartlett 1988).

The next chapter will outline and discuss the methodology of this thesis.

3.0 Research design and methodology

The objective of this chapter is to present the methodological framework of this thesis. The purpose is to offer transparency by discussing the methodological choices made over the course of my research. This chapter will present the process of planning, collecting and analysing quantitative and qualitative data, and is organized as follows: First, it outlines the case study as an approach to research design, and the combination of quantitative and qualitative approaches in the mixed method of this thesis. Second, it will discuss the quantitative data acquisition and analysis. Further, this chapter outlines and discusses the qualitative approach, including the selection of respondents, data collection and analysis. The chapter then moves into reflections around validity and reliability, and lastly discusses ethical considerations of this thesis.

3.1 Case study approach

This thesis has taken a case study approach to study innovation. Due to the great variation in possible cases, it might be challenging to concretely define a case study. Gerring (2004 p. 342) provides a concise definition of case studies as an "*intensive study of a single unit for the purpose of understanding a larger class of (similar) units*". Thus, a case study includes the study of one or a small number of instances i.e. 'cases' of a phenomenon with the purpose of exploring in-depth variation of the phenomenon, contextual influences and the explanation of that phenomenon (Baxter 2010). Miles and Huberman (1994 p. 144) define a case as an individual (or a role), a small group, an organization, a community or a nation. Within the context of this thesis the case is an organization – the Telenor Group, and further defined as specific geographic subsidiaries of Telenor Group. Subsequently, the subsidiaries of Telenor Group are cases within my case.

This thesis is an in-depth study of a single company to better understand how innovation is managed and carried out across different subsidiaries of large multinational companies (MNCs) and its subsequent implications. This study does not aim to generalize its findings. However, this study may generate some interesting propositions that might be examined and redeveloped through future research.

A case study is considered as an approach to research design, rather than a method in itself. Therefore, the next section will discuss the method applied in attempting to create a coherent

study. The method utilizes both quantitative and qualitative approaches in pursuing a detailed understanding of the case, in order to enable a thorough and valid answer to the research questions.

3.2 Mixed methods

Mixed methods are a relatively recent research domain, compared to quantitative and qualitative approaches. A significant part of the developmental work of mixed methods dates from the mid to late 1980s (Creswell 2014). Despite the approach's continuous discussion on a philosophical and practical level, the mixed method approach has increasingly been given attention over the last decades, and been incorporated in a range of social studies (Creswell 2014).

The purpose of mixed methods exceeds collecting and analysing both types of data. The data is combined in a specific way, for a specific purpose, where the overall strength of the study surpasses the use of a singular method (Creswell 2009). The research questions of this master thesis deal with heterogeneous and complex processes of innovation. One method alone might not be sufficient to analyse this phenomenon, thus creating the need for mixed methods, in order to provide both a detailed and a more general perspective (Winchester and Rofe 2010). As Creswell (2014 p. 215) claims: "*the 'mixing' of data, it can be argued, provides a stronger understanding of the problem or question than either by itself*".

In relation to research design, the mixed method approach employ three basic research design strategies; convergent, sequential and transformative (Creswell 2014). This thesis involves mapping the 'innovation intensity' of three Telenor Group subsidiaries combined with semi-structured interviews, which lead me to choose a sequential mixed method design. This thesis has employed an approach of this design inspired by Creswell, Clark, Gutmann and Hanson (2003). The quantitative results guide the selection of respondents for the qualitative investigation. The qualitative results might be used to support and explain the quantitative results, in addition to presenting a qualitative perspective of the matter.

The research questions guides the study. The questions will first be inquired through descriptive statistics and frequencies. Applying a quantitative method first may indicate the prevalence of innovation activity across Telenor Group subsidiaries, in terms of breadth and innovation expenditure. The quantitative result not only indicates the subsidiaries distribution

of 'innovation intensity', but also reveals relevant characteristics of the subsidiaries that lead to a purposeful selection of respondents for interviews. The qualitative semi-structured interviews will seek to examine and describe creation, adoption and diffusion of innovation. Further, the interviews will examine the degree of the two structural positions of 'global integration' and 'local responsiveness', and potential variation between the subsidiaries in this regard. Together the quantitative and qualitative methods aim to elucidating the heterogeneity of innovation processes and subsequent implications for innovative management across Telenor Pakistan, Telenor Bulgaria and Canal Digital AS. The mixed method research design of this thesis is illustrated by figure 3.1.

Figure 3.1. The mixed method research design approach
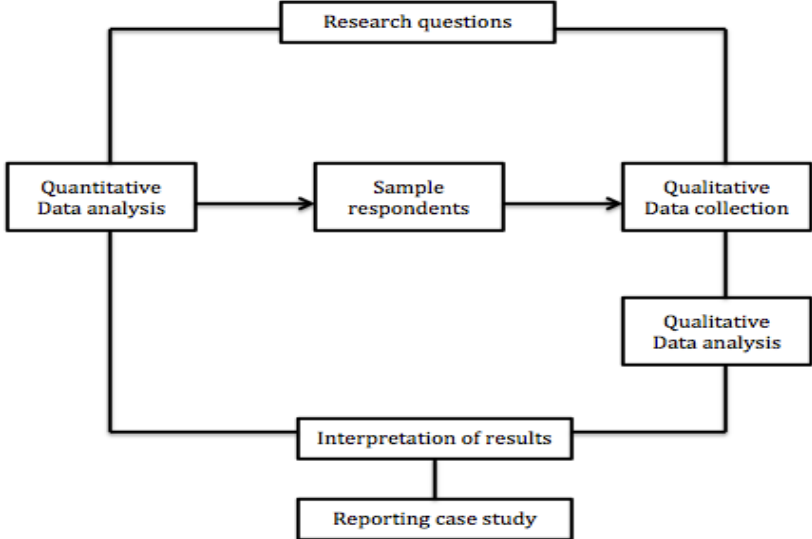
(Creswell 2012)

Figure 3.1 is intended to demonstrate the relationship between the research questions, the methods and how they contribute in reporting the case study results. As one can observe in the figure the quantitative approach does not include data collection, as the data was acquired from the Telenor Group department of Research and Future Studies (RFS). The acquisition of quantitative data is discussed in the next sections of this chapter. Further, the quantitative data analysis guided the selection of respondents to the qualitative data collection. Both the quantitative and qualitative data are applied in an attempt to provide a rich and thorough answer to the research question.

3.3 Quantitative approach

This section will describe the process of acquiring data, and the processes of analysis - thus offering the reader repeatability. First, the process of data acquisition is described, before

commencing to the subsections describing how R&D and innovation is defined in Telenor Group. Lastly, this section describes the processes of measuring innovation intensity in the subsidiaries of Telenor Group.

3.3.1 Data acquisition and collection

I was able to acquire a dataset consisting of expenditure data of R&D and innovation in all (17) Telenor's R&D performing subsidiaries. Hildrum and Hallingby (2013) from RFS have operationalized a set of definitions of R&D and innovation in Telenor Group. These definitions are according to Hildrum and Hallingby (2013) operationalized in a way that reflects the actual processes of R&D and innovation in Telenor Group. The dataset acquired from RFS was build up by a combination of interviews and surveys targeted at Telenor subsidiaries, Telenor internal documents, and accounting records from all subsidiaries (Hildrum 2012). The process of data collection will be briefly discussed in the following section.

The data collection process started out with the OECD definitions of R&D[4] and innovation[5]. The concepts was re-defined and interpreted in the context of a telecommunication perspective due to a potential misfit between the established definitions and the actual activity in Telenor Group, as will be further discussed later in this section.

The project group in Telenor developed and distributed a survey asking about R&D and innovation expenditure data from all 15 of Telenor Group's R&D performing subsidiaries. The survey addressed all innovation projects across the Telenor Group. Furthermore, financial controllers in the subsidiaries were divided into three groups based on their responsibility area: one group for infrastructure projects, one group for services projects, and one group for new business model projects. The controllers were asked to estimate the share of project budget spent on "maintenance" (non-innovation), "significant upgrading" and "brand new". The results of this survey, together with the other sources outlined above, built the 'innovation expenditure' dataset of 2013 (Hildrum 2012; Hildrum and Hallingsby 2013).

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[4] "creative work undertaking on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and the use of this stock of knowledge to devise new applications" (OECD 2002 p. 30). The definition covers three activities: basic research, applied research and experimental development.

[5] "An innovation is the implementation of a new or significantly improved product (good or service), or process a new marketing method or a new organizational method in business practices, workplace organization or external relations" (OECD 2005 p. 46)

The following sections will explain how the researchers of RFS define innovation in Telenor Group and what innovation in the categories "infrastructure", "processes" and "services" entails. Further, the section will briefly discuss why it makes sense to define and categorize innovation in Telenor Group in a way that deviates from the OCED's definition of innovation.

Defining Research and Development (R&D) and innovation in Telenor

The basic definition of innovation as per Oslo manual (OECD 2005 p. 46) and R&D as per Frascati manual (OECD 2002 p. 30) might not be appropriate for Telenor. For instance the Frascati manual's (OECD 2002) definition of R&D might not accurately capture Telenor's R&D processes and spending, because Telenor has relative modest investments in basic R&D, the same applies to R&D funds for new product and service development. Instead: "*the main developmental effort is associated with the construction of capital-intensive telecommunications infrastructure and associated business models in emerging markets…. Telenor often develops – by way of re-combination – entirely new constellations of technologies and business models that are tailored to serve idiosyncratic needs in these markets*" (Hildrum 2012 p. 7). Thus, the need for a company-level operationalized definition of R&D and innovation expenditure has been argued to more accurately capture the actual R&D and innovation activity in Telenor Group, and further prevent a possible under-estimation of these activities (Hildrum 2012).

Innovation expenditure in Telenor Group therefore consists of expenditure on infrastructure, service and processes. Examples of innovation projects in these categories are further discussed in chapter 4. It seems sufficient for the methodology chapter to outline the definitions that have been the basis for collecting data regarding innovation expenditure in Telenor Group. Innovation expenditure is one of the inputs in this master thesis to assess the 'innovation intensity' of each subsidiary. Innovation in the categories is defined as follows (Hildrum and Hallingby 2014 p. 2-5):

Infrastructure expenditure
- **Maintenance**: Expenditures associated with the simple repair, upgrading and extensions of existing infrastructures and platforms (non-innovation).
- **Significant upgrade**: Expenditures aimed at substantial improvements in performance and expenditure-efficiency of existing infrastructures and platforms. This category also

includes investments aimed at development of infrastructures that are new to the BU, but not new to Telenor as a group.

- **Brand new:** Expenditures aimed at the development of infrastructures and platforms - and associated competences - that are brand new to Telenor as a Group, but not necessarily to the world market.

Services expenditure

Types of services included might be actual end-user services for consumers and businesses, and service enabling platforms.

- **New marketing concept:** Implementation of new marketing concepts associated with the services, which are new to the BU, but not necessarily new to Telenor as a group.
- **Significant upgrade:** market introduction of significantly improved services that carry with them substantial improvements in performance, expenditure-efficiency and the kind of value provided to the customer, which are new to the local market of the BU, but not necessarily new to Telenor as a group.
- **New service:** market introduction of services that are new to the local market of the BU, but not necessarily new to Telenor as a group.

Processes expenditure

Process development refers to the introduction of a new organizational process in Telenor's business practices. Examples may be new business practices for organizing internal procedures, new methods for organizing work responsibilities and decision-making inside the corporation, new methods of organizing relationships with external organizations.

- **Significant upgrading:** expenditures made for the purpose of substantially changing existing organizational processes.
- **Brand new:** expenditures made for the purpose of developing organizational processes that are brand new to Telenor group, but not necessarily new to the market.

The dataset also distinguishes capital expenditure (CAPEX) and operational expenditure (OPEX), but include both estimates (separately) in the dataset. The telecommunications industry is highly capital intensive, but if one looks into the expenditures, the main share is associated with the acquisition of equipment and building infrastructure (CAPEX), thus the redundancy expenditures of R&D personnel (OPEX) is comparatively low to the investment

expenditures (Hildrum 2012). CAPEX and OPEX are included in the dataset, because a decision to only account for OPEX "*would not fully reflect the technological expenditures associated with this process*" (Hildrum 2012 p. 10).

From Telenor Group's point of view it makes sense to categorize innovation expenditure in this manner, and not applying OECD's definitions of R&D and innovation, because it is argued that OECD's definition not accurately capture the innovative activity in Telenor Group. The categories reflect where the innovation expenditure and subsequently innovative projects in Telenor Group occur. This thesis will no further discuss issues concerning Telenor constructing a tailored definition of innovation, and measuring innovations by those standards. The point here is to be transparent about the definitions by which the quantitative data has been collected.

Issues concerning the acquisition of data

There are a couple of issues concerning acquisition of data, as opposed to collecting them personally. One such concern is the issue of the quality of the data, due to the fact that I have not collected the data myself. This issue is related to validity, reliability and ethical concerns. However, given the throughout description of the data collection procedures and access to the raw data, I am confident that both the data collection procedures, and the data themselves are valid and confine to the ethical standards of data collection. On the other sider there are not only disadvantages in utilizing acquired data. The innovation expenditure data set is a comprehensive collection of quantitative data that I most likely would not have been able to collect myself. Hence, the acquired dataset provides this thesis with a unique access to firm level data, which otherwise would not have been included in the analysis.

3.3.3 Quantitative analysis

As already discussed, the dataset applied in this master thesis was built by the principles and definitions of Telenor Group. The research questions focus on the characteristics and variations of innovative activity. The purpose of using descriptive statistics[6] is to examine the distribution of innovative activity in the R&D and innovation performing subsidiaries of Telenor Group.

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[6] This thesis has used SPSS v.22 for OSX 10.10.2

The intensity of innovative activity is one of the parameters where one might see variation between the subsidiaries. A scatterplot is a visual representation of a bivariate relationship (Field 2013). Thus, the scatterplot illustrate how low-high 'innovation intensity' one subsidiary has, compared to other subsidiaries.

There are two variables of the scatterplot. First, the breadth of innovation projects, in terms of the number of technological disciplines[7] the innovation projects adhere to, within the categories of 'infrastructure', 'services' and 'processes'. Breadth is calculated by technological disciplines because one discipline i.e. 'IT infrastructure' may have several projects, therefore only accounting for the number of projects may overestimate the thematic breadth of activity. The second variable of the scatterplot is the ratio of innovation expenditure as a percentage of total revenue[8]. This is a common method of calculating innovation intensity, for instance by the Centre for European Economic Research (Aschoff et al. 2006). The scatterplot illustrates the distribution of all Telenor Group subsidiaries, and how the three selected cases of this thesis, is performing in comparison to the other subsidiaries.

3.4 Qualitative approach

This subchapter will discuss the qualitative approach, in terms of selecting respondents, carrying out interviews and the process of analysing the data.

3.4.1 Selection of respondents

There is a need for sampling within the case, as one cannot study every aspect of one case (Punch 2005). This thesis has chosen to sample respondents by 'purposive sampling' (Punch 2005 p. 187) thus sampling respondents with a specific focus in mind. I was in a good position to sample internal Telenor cases because I had the quantitative data about innovation in all the subsidiaries.

The selection of respondents is based on sampling from subsidiaries representing contrasting distribution of the quantitative 'innovation intensity'. This process left me with three

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[7] A technological discipline is for the purpose of this thesis defined as one distinctive field of technology such as "IT infrastructure", "fiber network" or "CRM software development". There may be several innovation projects within one discipline.

[8] The total revenue of each subsidiary was derived from Telenor Group's annual report 2014, which account for the revenues in the fiscal year of 2013 – the same year as the innovation expenditure data was collected from.

subsidiaries - Telenor Pakistan, Telenor Bulgaria and Telenor Broadcast (Canal Digital AS). The sampling also included the choice of individual respondents within the chosen subsidiaries. In order to get in contact with appropriate candidates, I employed a strategy of snowballing through key respondents (Bradshaw and Stratford 2010). Thus, I got in contact with one 'innovation enthusiasts', the manager of innovation and Internet solutions at Telenor Pakistan. The respondent further referred me to other respondents, who had relevant knowledge and willingness to participate.

Parallel to this process, there was an 'innovation workshop' in Bangkok, in which innovation managers from all the Asian subsidiaries, Telenor Bulgaria and Telenor Broadcast voluntarily participated. Due to a belief that these participants would both have the knowledge requested and be interested in a study about innovation in Telenor Group, I reached out to one participant from Telenor Bulgaria and one from Canal Digital AS. They both enthusiastically agreed to an interview, and I further pursued the snowball technique to get in contact with other respondents in their respective subsidiary.

Potential respondents all received 'introductory letters' per e-mail (Yin 2014). These letters contained an outline of the topic, objectives and the research questions of the master thesis, further the respondent's specific contribution, the issues that I wished to discuss and the duration of the interview and follow-up (Dunn 2010). The letter also addressed the issue of informed consent (Dowling 2010). The introduction letter may be found in appendix 1. The respondents provided feedback fairly quickly on the introductory letters, and 7 respondents were interesting in participating in the study.

The decision related to the number of respondents to include in the study followed the principles of 'point of saturation' (Manson 2010) Thus, the sampling came to an end when I experienced that the respondents were not providing any new and valuable information in related to the research questions.

3.4.2 Data collection

Semi-structured interviews were the tool for collecting qualitative data. This approach enabled the interview to be centred around the research question, while being flexible enough to follow-up on emerging issues.

An interview guide (appendix 2) was constructed prior to each interview (Dunn 2010) that provided me with a list of thematically questions related to the research questions. A 'pyramid structure' organized the questions of the interview (Dunn 2010). Thus, the interviews started by introducing the topic by questions that were easy to answer i.e. employment history and current projects and further moved on to addressing more specific issues of innovation characteristics, creation (innovation processes), adoption, diffusion and global integration/local responsiveness.

The semi-structured was chosen in order to provide certain flexibility to the interview. This enabled me to ask questions exceeding the interview guide, and adapt questions to each respondent (Dunn 2010). The structure further allowed the respondent to add remarks and address new topics during the interview. This was important, as the respondents were all more knowledgeable than me on this field. Consequently, I found semi-structured interviews to be the most appropriate type of interview.

The interviews conducted over Skype and in person were all audio recorded to enable a detailed transcription of the interviews afterwards. The transcript was sent out to the respondents after competition. All the respondents were also willing to be part of follow-ups per e-mail, following either face-to-face or Skype interviews. The follow-up was used for clarifying certain issues, citation-checks and in some case discussing preliminary findings. As the processes of selecting respondents and data collection have been discussed, the next section will address how the data was analysed.

3.4.3 Data analysis

According to Kvale (2007) numerous interview analyses abandon the use of specific analytical methods. A shifting between different techniques and approaches to analysis, or what Kvale (2007) termed 'bricolage', was applied to my analysis. In this pragmatic analysis approach, particularly recommended to mixed method studies, the analysis techniques are ad hoc and freely interchanged, as opposed to strict analytical models such as discourse analysis (Kvale 2007). The triangulation of analytical techniques involved coding, categorization, mapping the knowledge and visualizations of findings (i.e. figure 4.7).

Transcribing data as the initial step in qualitative analysis is a common feature agreed upon by scholars (Punch 2005). The transcription[9] of data was conducted shorty after each interview, while the dialog was still 'fresh in mind'. To ensure that I did not misinterpret any information and to ensure the integrity of my respondents, the transcription of each interview where sent out for review to each respondents. There were no critical remarks. However, the question of whether the respondents actually read through the transcript remains unanswered.

The research processes of this thesis have been interactive processes of theorizing and analysing. Subsequently, the research objective and questions, initially set during the course of literature review, have changed during the process. When the data collection and preliminary analysis commenced it was clear that the research questions required review. Though the research questions have changed, the main topic that is to better understand how innovation is carried out across subsidiaries in a MNC and how this may vary, remained. Furthermore, the interview guide evolved - some questions were added and others reformulated as my knowledge of the issue increased. The adjustment of research- and interview questions first and foremost let the empirical data guide the analysis.

3.5 Validity and reliability

Validity and reliability, though only discussed in this chapter, have been central issues throughout the whole research process (Kvale 2007).

3.5.1 Validity

Validity referrers to "*the appropriateness of a measure*" (Ragin 1994 p. 193). Does the study actually measure what it intends to measure? *Overall validity of the research* revolves around creating coherence throughout the study between what one intends to study and the instruments deployed to collect data and analyse the phenomena. Further, *validity of data* referrers to the extent the collected data actually measure what the study intends to measure (Punch 2005). Lastly, there are the aspects of *internal* and *external validity*. The former referrers to whether the study is representative of the reality, and the latter referrers to whether it is generalizable (Punch 2005).

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[9] I used transcription software 'Transcriptions' to assist the transcription.

I will argue that the quantitative means employed in this thesis satisfies the criterions of validity. In relation to innovation expenditure in Telenor Group, there are other standardized methods of measuring innovation at firm level. The definitions applied by Telenor Group in collecting quantitative data deviates from these standards. This thesis has attempted to be transparent in the principles of which the quantitative data has been collected. As the definitions of innovation in Telenor Group deviates from established standards (such as the OECD 2005), the results may not satisfy the criterions of external validity. On the other hand this thesis has measured innovation in Telenor Group based on principles that are argued to more accurately capture the innovative activity at Telenor Group (Hildrum and Hallingsby 2012). This may be argued to ensure validity of data within the context of this case.

Regarding the validity of my qualitative research, I was aware of potential threats to validity. Although I chose the approach of semi-structured interviews, I had certain key questions that every respondent was asked, to ensure that information I had obtained through formal interviews, informal conversations and information from Telenor Group was correct (Bradshaw and Standford 2010). Telenor Group did not commission the thesis. However, my supervisory is an employee of Telenor RFS, and has done research on R&D and innovation in the Telenor Group. I have done my best not be biased towards his viewpoint about innovation in Telenor Group, through balancing the information I have obtained whilst at the same time staying reflective and conscious of my own action and choices (Dowling 2010).

The mixed method approach is also intended to address the *overall research validity*, as it was deemed appropriate to have different types of data input and analytical tools to study such a heterogeneous and complex issue as innovation. This ensured that the study was not 'trapped' by one method's strict analytical regime and enables me to study the complex issue of innovation from different perspectives.

3.5.2 Generalizability

"*Generalization should not necessarily be the objective of all research…*"
Keith F. Punch 2005 p. 145

Whether a case study may generalize its findings depends on both the purpose and the context of the case (Punch 2005). There are some instances were generalization is not objectively possible, for instance if the case is unique in central aspects. The uniqueness of the Telenor

Group case has first and foremost materialized in how innovation and R&D expenditure are defined in Telenor Group, and local innovation processes at subsidiary level. In unique cases the intention is to understand the complexity in the case, rather than to generalize (Punch 2005), which has been the aim of this thesis.

The findings are not generalizable in the sense that one will observe the exact same findings in other MNCs; however, there may be a form of theoretical 'transferability'. Knowledge about the characteristics of innovation, and heterogeneity of innovative activity, and the implications for Telenor Group, may to some extent be transferred. This form of '*analytical generalization*' in which this thesis contributes, may point towards potential implications of this structure of innovative activities in similar high technology companies (Kvale 2007 p. 127).

In evaluating the validity of qualitative research, Kvale (2007 p. 123) maintains that continually '*checking, questioning and theorizing*' ensure validity. To ensure validity the findings were shared with the respondents and asked for critical remarks and/or rival explanations. By the dualistic methical approach, in which the qualitative approach further enquires the quantitative findings, the findings gain credibility - subsequently increasing the overall validity of the research (Punch 2005).

3.5.3 Reliability

Reliability of a study concerns the "*consistency and repeatability of the research procedures…*" (Yin 2014 p. 240). This chapter has sought to offer a transparent presentation of the data collection, analysis and interpretation. In this regard, the findings are repeatable, given the same data access as I have gained, where at least the quantitative results are subject for replication. Reliability is a slightly more complicated issue in relation to the qualitative results, as they mainly consist of experiences and opinions – factors that may change over time. Furthermore, Telenor Pakistan is in a transitional phase, meaning that they are evolving from a greenfield operation to a mature company. Telenor Bulgaria is in the middle of a major transformation phase being acquired by Telenor Group less than a year ago. Therefore, the respondent opinions and the innovation processes themselves may change over time, as the companies stabilizes in a mature market. Nevertheless, this chapter has outlined how the interviews were conducted, transcribed and the subsidiaries in which the interviews were

conducted. Furthermore, through the processes of citation check and discussion with the respondents in terms of key findings, I have strived towards ensuring reliability of the results.

3.6 Ethical considerations

An important ethical issue in doing case studies is the risk of using a case study in order to confirm preconceived positions. This issue arises due to the need to understand the case before choosing a representative case that may undesirably guide the findings towards supportive evidence. In order to avoid this sort of bias the preliminary finding from the research were discussed with my supervisor and other researchers at the Centre for Technology, Innovation and Culture at the University of Oslo[10] with experience of working with the Telenor Group. The discussions were initiated in order to be challenged on rival explanations. When the rival explanations could be met with documented rebuttals, it is likely that the threat of bias in this thesis was reduced (Yin 2005).

The qualitative approach has demanded considerations of ethical issues. The respondents are anonymous, as there is no clear reason why their name should be published. This is also to ensure that this thesis would not bring liability upon the respondents. The respondents all gave an informed consent before the interviews commenced and were further offered the opportunity of citation check (Dowling 2010).

Throughout the whole research process, I have strived towards the highest ethical standards. This standard has involved focusing on the well-being of the informants – *"do no harm and maximize possible benefits and minimize possible harms"* (Ragin and Amoroso 2011 p. 89). Further, it has included informed consent (Dowling 2010), avoiding plagiarism or falsifying information and understanding the limitations of my work (Yin 2005).

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[10] Researches who's also signed an FDA agreement with Telenor

4.0   Empirical analysis

In the following chapter, I will present the empirical findings of my study based on quantitative data, qualitative interviews and internal documents and publicly available information. I conducted the analysis to answer the following research questions:

1. *What characterises innovation in a large MNC?*
2. *How and why does innovation activities vary across subsidiaries within the same MNC?*
3. *What are the implications of inter-subsidiary variation with regards to being an innovative MNC?*

In the empirical analysis, the findings will be connected and analysed in relation to the theoretical framework presented in chapter two. This chapter is organized as follows: first, it will give a brief introduction of the Telenor Group including an overview of the organisation, discussing R&D, innovation and industrializing in the Telenor Group. In addition the first section will discuss innovation expenditure in Telenor Group, and innovation intensity of its subsidiaries. The first part will thus discuss what characterises innovation in Telenor Group as a whole.

Secondly, this chapter will introduce the three subsidiaries of this case study: Telenor Pakistan, Telenor Bulgaria, and Telenor Broadcast (Canal Digital AS). The subsidiaries will be analysed in terms of the characteristics of innovation at subsidiary level, including innovation expenditure and current innovative activity. In order to explain how and why the subsidiaries vary with regards to innovative activity the empirical findings will be analysed in terms of two theoretical frameworks; creation, adoption and diffusion of innovation (Ghoshal and Bartlett 1988) and global integration and local responsiveness (Marin and Bell 2005). This analysis will include an exploration of the process of 'creation' i.e. the innovation processes, adoption and diffusion of innovation and the four organizational attributes of normative integration, density of internal communication, local slack resources and local autonomy. Further, the analysis will turn to subsidiaries structural position in Telenor Group in terms of being globally integrated and/or locally responsive. The analysis on subsidiary level is followed by a discussion of the implications of the findings at subsidiary level.

Following the separate analyses of three cases, the subsidiaries are compared across in a discussion revolving around what the findings may mean and how the findings resonates with the theoretical framework. A discussion about the implications of the findings for Telenor Group as a whole concludes the empirical analysis.

4.1 Telenor Group

Telenor Group provides mobile operations in 13[11] countries, with a total number of 186 million mobile subscribers. In addition, Telenor Group offers broadband and broadcast services in the Nordic region (Telenor Group 2015a). Telenor Group has a strong foothold in the European and Asian markets, and is considered one of the leading operators in the Nordic region (Telenor Group 2014c). Total revenues in 2014 surpassed MNOK 107 billion (Telenor Group 2015a). Telenor Group's operations are concentrated in three main regions (Telenor Group 2014b):

Nordic region: Norway, Sweden, Denmark

Eastern and Central Europe: Bulgaria, Serbia, Hungary and Montenegro

Asia: Pakistan, Bangladesh, Thailand, Malaysia, Myanmar and India

The Asian markets accounts for 49% of Telenor's revenues – the European 20% and Telenor's domestic market, Norway account for 23% of total revenues (Telenor Group 2015a).

4.2 Organization

The Telenor group has three main business areas; 'Telenor Broadcast', 'Telenor Digital' and 'Mobile Operations'. Telenor Digital and Telenor Broadcast are subsidiaries organized directly under Telenor ASA, whereas the mobile operations are organized into 12 geographical subsidiaries. Consequently, Telenor's structure is as follows;

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[11] Telenor service an additional 18 markets through their ownership interest (33%) in VimpelCom Ltd.

Figure 4.1 Structure Telenor Group
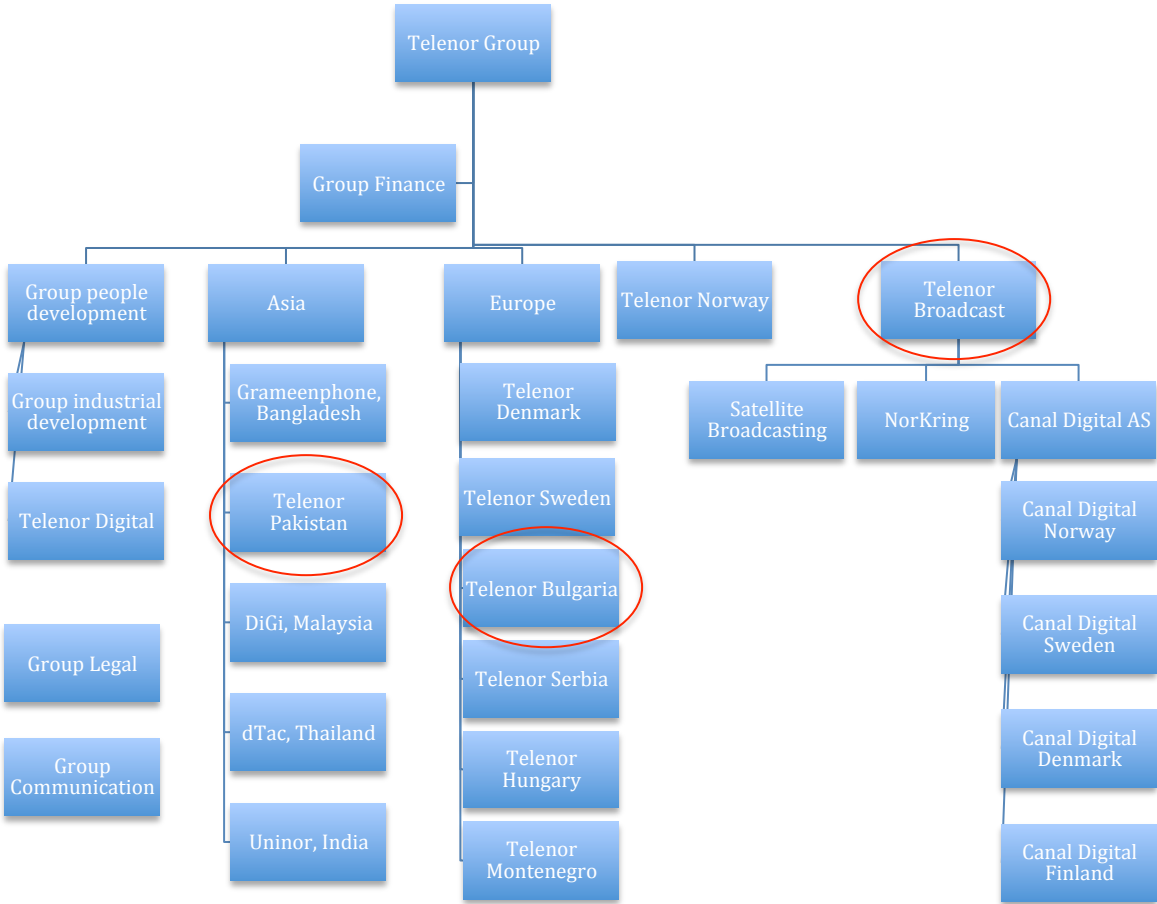
(Telenor Group 2014d; Telenor 2013)

Figure 4.1 illustrates the corporate structure of Telenor Group. The three cases of this study are circled, as to indicate their position in Telenor Group. As Telenor Group has been briefly introduced, the next section will discuss research and development, and innovation in Telenor Group.

4.3 Research and development (R&D) and innovation in Telenor

Telenor Group states in the annual report of 2013 that innovation is of central importance in order to strengthen Telenor's operations and further develop Telenor business models (Telenor Group 2013). This section will examine the characteristics of R&D and innovation expenditure in Telenor Group. Further, it will examine the innovation intensity of Telenor Group subsidiaries, and in terms of expenditure and in terms of breadth of technological disciplines in innovation projects.

Telenor Group has one corporate research unit – 'Research and Future Studies' (RFS). RFS focus areas are 'technology shifts' and 'customer and market dynamics' (Telenor Group 2014e). RFS is the only research unit in the Telenor group. However, R&D and innovation is occurring in both centrally and locally in the subsidiaries (Sandberg 2013). Official numbers indicate that there are less than 400 employees in these positions, however Sandberg (2013) (Head of Telenor Research) claims that there are approximately around 1000 people working with innovation in Telenor Group at any given time.

4.3.1 Innovation and research expenditures

Even though Telenor Group have shifted its focus from technology towards services, Telenor Group's innovation and research expenditure are associated with heavy investments in infrastructure (Hallingsby & Hildrum 2014), as discussed in chapter 3.3.2. Rather than investments in basic research and development (R&D), and development expenditures of new products and services, Telenor Group invests in capital-intensive telecommunications infrastructure (Hildrum 2012 p. 7). Based on telecommunications infrastructure, Telenor Group further develops new services and business models in emerging markets (Hildrum 2012).

In 2013 Telenor Group's innovation expenditure amounted to 2,8 BNOK of which 400 MNOK was R&D expenditure (Telenor Group 2013). Thus, Telenor Group's have significantly higher expenditure on innovation, compared to expenditure on R&D. The innovation expenditure of Telenor Group 2011-2013 is illustrated in the following figure.

Figure 4.2 Innovation and research expenditure
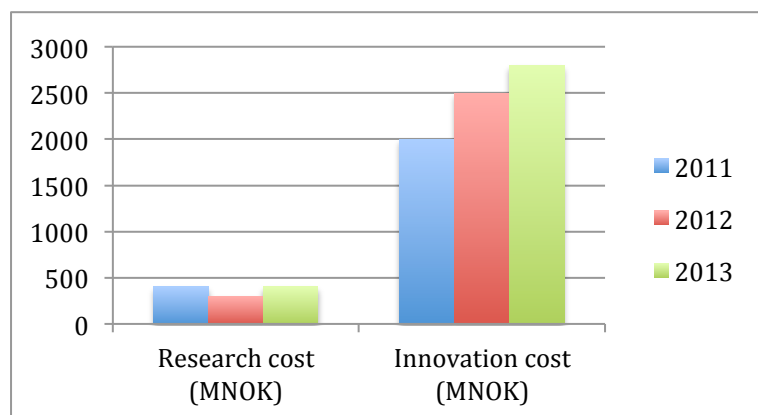
Key figures from the annual report 2011, 2012 and 2013.

The innovation expenditure of 2012 is characterized by heavy investment in infrastructure i.e. 4G[12] network in Norway and Sweden, and services i.e. financial services and Comoyo (Hildrum 2013) There are somewhat similar characteristics of the expenditures in 2013 in which investment in infrastructure i.e. 4G/LTE[13] represents a large share of the total innovation expenditures (Telenor Group 2013).

Besides expenditure on infrastructure, there are two other main categories of innovation expenditure: services and processes. The rationale for this categorisation was discussed in chapter 3.3.1. Before entering a discussion about innovation expenditure at subsidiary level in Telenor Group, the next paragraphs will exemplify what kind of projects the three categories included in quantitative data material of 2013.

Innovation expenditure on infrastructure projects in 2012 included a 3G[14] and 4G network roll-out, (Telenor Sweden, Telenor Norway), information technology (IT) infrastructure in Telenor Bulgaria (e.g. Enterprise resource planning (ERP) and IT software development, purchase of software licences and hardware), network modernization (DiGi, e.g. swapping all existing sites (5500) with new equipment), and information systems (IS)/IT projects such as network capacity, automatic SMS generation, web enhancement, and traffic steering and management control (PCRF) (Telenor Denmark).

Innovation expenditure on service projects included a customer experience tool that presents a personalized video offer, based customer specific data (Telenor Bulgaria). Further, it included billing software development, CRM software development (Telenor Bulgaria), an ecosystem for adding advances TV services to existing broadcast operations (Telenor Broadcast) and mobile bank services (Telenor Digital).

Innovation expenditure on processes included the development of processes to identify and fix security issues (GSS), customer centric program (Telenor ASA), and implementation of a new analysis tool enabling coordination of customer data from all the sales channels, which further will enable tailored offers to the customers (Telenor Norway).

The following table 4.1 illustrates the total number of innovation projects in the categories of "infrastructure", "services" and "processes" in all (15) R&D performing subsidiaries of

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[12] Forth-generation mobile telecommunications technology
[13] Long-Term Evolution
[14] Third-generation mobile telecommunications technology

Telenor Group. This presentation enables a discussion of some general characteristics of innovation in Telenor Group.

Table 4.1 Innovation projects

Business unit	Infrastructure	Services	Processes
Grameenphone, Bangladesh	7	1	2
Telenor Broadcast	10	7	1
Telenor Bulgaria	9	7	0
Telenor Pakistan	4	1	2
Uninor (Telenor India)	0	1	0
DiGi (Malaysia)	5	5	3
Telenor Digital	0	19	0
Telenor Global Share Services (GSS)	9	6	1
Telenor ASA	0	0	13
dTac (Thailand)	9	8	2
Telenor Eiendom	0	2	1
Telenor Sweden	14	11	6
Telenor Denmark	17	2	2
Telenor Norway	23	9	8
Telenor Serbia and Montenegro	4	1	1
Total	107	78	40

The data has been derived from the dataset of Hallingsby and Hildrum (2014) of Telenor RFS.

Some general characteristics of Telenor Group may be derived from the table. Generally, the innovative activity in Telenor Group as a whole is characterized by having highest innovation activity in infrastructure projects, followed by services, and the lowest expenditure on processes development. For instance, this includes the subsidiaries Grameeenphone, GSS, Telenor Denmark, and Telenor Norway.

'Innovation intensity' includes both the amount of innovation expenditure and the breadth of innovation projects. The next section will examine breadth in terms of the technological disciplines the projects adhere to, across the subsidiaries. It is beyond the scope of this chapter to discuss the 'innovation intensity' of all the subsidiaries, however, the next section will highlight some key characteristics of the innovation expenditure in a few subsidiaries, the cases of this thesis being amongst them.

Telenor Norway has the largest number of infrastructure projects, and comparatively this subsidiary has a substantial breadth of technological disciplines in its innovation projects. The infrastructure projects of Telenor Norway involve seven different technological disciplines, including mobile broadband, 3G network and fibre technology. This pattern is also apparent in one of the cases – Telenor Bulgaria. This subsidiary has a relative high number of infrastructure projects (nine) and a great breadth of technological disciplines (nine), including IT infrastructure, operational support systems (OSS), network capacity upgrades and mobile broadband. Furthermore, this breadth of disciplines is also apparent in Telenor Bulgaria's innovation in service. In 2013, Telenor Bulgaria has seven projects in this category within six different disciplines, including billing development, CRM software development and value-added services.

As noted in the methodology chapter the breadth of projects is not only a result of the number of projects, but also the technological disciplines. Telenor Broadcast has a high number of projects both in infrastructure and in services. Even though Telenor Broadcast has a high number of infrastructure projects, the subsidiary has, at the same time, comparatively lower breadth of technological disciplines in infrastructure projects, as all projects are related to 'terrestrial transmission and broadcasting'. On the other hand, Telenor Broadcast has a greater breadth of disciplines in relation to services. Within a total of seven projects there are five different disciplines involved, making the overall breadth of technological disciplines in this subsidiary higher. This includes the development of 'virtual smartcard' as a substitute to physical chip-based card for the TV-satellite decoder, and a ' multi-screen ecosystem' for adding advanced TV services to existing broadcast operations.

On the other side, there are subsidiaries that have a more narrow focus in their innovation projects. This includes Telenor ASA that only had innovation expenditure on processes; there were no infrastructure nor services projects. However, within processes there is a great breadth of disciplines including eBusiness, brand-tracking, programs for operational excellence, customer centric programs, and shared services related to IT, intended to include all of Telenor Group's subsidiaries. Moreover, the narrow focus of innovation projects also includes Telenor Pakistan. Compared to the other two cases of this study, Telenor Pakistan has, despite its high innovation expenditure, the lowest number of innovation projects. This also entails a lower breadth of technological disciplines.

The above discussion indicates that there are varying degrees of breadth in the innovation projects of Telenor Group subsidiaries. Furthermore, the dataset was applied to create a scatterplot, in order to visualize the distribution of subsidiaries in terms of innovation intensity. There are two variables of the scatterplot. First, the breadth of innovation projects in terms of the number of technological disciplines the innovation projects adhere to, within the categories of 'infrastructure', 'services' and 'processes'. Thus, even as Telenor Bulgaria has seven innovation projects, there are only six disciplines involved. The second variable of the scatterplot is the ratio of innovation expenditure as a percentage of total revenue of the subsidiary in question[15].

Figure 4.3 Innovation intensity Telenor Group
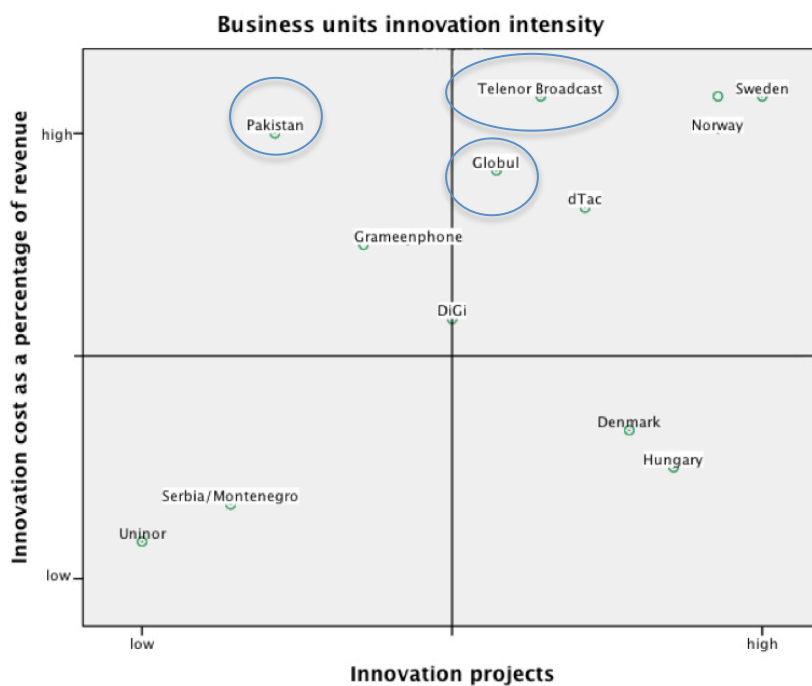
As the Scatterplot indicates, there is great variation between the subsidiaries in terms of innovation intensity. The three subsidiaries of this case study are circled in the scatterplot. One may also observe a varying degree of innovation intensity within the three chosen cases, which I will further discuss later in this chapter. It seems sufficient here to point out that Telenor Broadcast has the highest intensity. Telenor Broadcast has already been discussed in terms of having relatively great breadth technological disciplines. The scatterplot further

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[15] The total revenue of each subsidiary was derived from Telenor Group's annual report 2014, which account for the revenues in the fiscal year of 2013 – the same year as the innovation expenditure data was collected from.

indicated that of the three chosen cases for this thesis Telenor Broadcast is the subsidiary that relatively speaking has the highest expenditure on innovation, as a percentage of total revenue. Telenor Broadcast is followed by Telenor Bulgaria (Globul) that has a more narrow breadth of technological disciplines, and somewhat lower innovation expenditure. Lastly, there is Telenor Pakistan, though this subsidiary has high innovation expenditure, there is a more narrow breadth of technological disciplines, with focus on infrastructure projects, which gives Telenor Pakistan lower innovation intensity, compared to the other two. All three cases will be discussed in more detail later in this chapter.

So far, this chapter has discussed some general characteristics of innovation both in Telenor Group and at subsidiary level. The discussion has centred on innovation expenditure, and the breadth of technological disciplines. The findings from the quantitative data suggest that there is variation in the focus of innovative activities in either infrastructure, processes or services. Furthermore, the data indicates variation in terms of innovation intensity of subsidiaries.

Before moving into a discussion of innovation at the three chosen subsidiaries, this chapter will discuss the case of industrialization in Telenor Group. This is a central issue because the industrialization across the Group affects innovation at the subsidiary level.

4.4 Industrializing in Telenor Group

Industrializing in Telenor Group is about leveraging scale and standardizing across the subsidiaries. The agenda of industrialization aims to enable the subsidiaries to grow, through establishing new operation models. As Hilde Tonne, Head of Group Industrial development states: "*Industrialization, above all, is about meeting our customers' needs. By streamlining our operations we clear up capacity for innovation*" (Telenor Group 2014f).

The establishment of standardized operation models is an attempt to increase global integration in Telenor Group (Telenor Group 2014f). As noted, the high capital intensity associated with building infrastructure, network and systems results in a higher threshold for profitable operations. Consequently, the design of network, system, product and services development (innovation), operational models and procurement is driven towards global integration, as this may enable economies of scale and economies of scope for a telecommunications operator (Birnik 2007). In Telenor Group centralizing and standardizing certain operations carry out the processes of industrialization. This includes human resource

management, IT, finance, accounting, and procurements (Telenor Group 2014f). Furthermore, Telenor Group has implemented a project and portfolio management " Telenor project model" globally, for shared services and Telenor Group subsidiaries. The Telenor project model is one of the main vehicles of global integration in the area of innovation management in the subsidiaries, and will be extensively discussed throughout the analysis.

The Telenor project model is illustrated in figure 4.4. The rationale for implementing the project model was in order to address reoccurring challenges in projects, such as the lack of standardized and integrated tools for project management (Telenor Group 2014i). Telenor Group claims that the benefits of implementing the project model are an increased effectiveness of project management processes, improved resource allocation and project prioritization and finally improved execution of Group projects (Telenor Group 2014f). Thus, the intended effect of the model is increased effectiveness and cost-efficiency as a result of standardizing the management of projects.

Figure 4.4 Telenor project model.
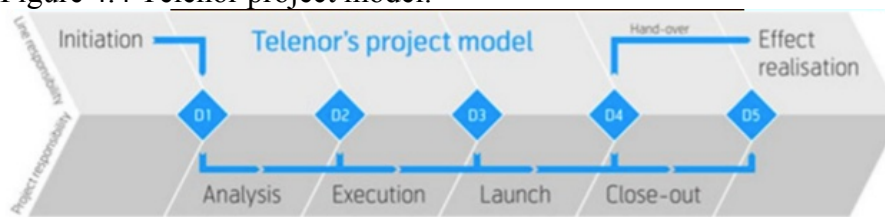
Adapted from Telenor Group 2014a

The project model consists of six phases and five decision points. The model has a 'check/list' orientation, i.e. all the steps and checks need to be in place before a project can commence to the next phase. Because of the focus on industrialization and standardization of processes in Telenor Group, all innovation projects in the subsidiaries are instructed to apply the project model, alternatively their own version of the model (TP1 2015).

Industrialization may be discussed in relation to normative integration and local autonomy (Ghoshal and Bartlett 1988). Enforcing a project model in order to better meet Telenor Group's goals may be considered a tool of normative integration. Thus, ensuring a similar way of handling projects across Telenor Group may positively influence the level of normative integration of the subsidiaries. According to Ghoshal and Bartlett (1988) a higher

degree of normative integration will have a positive impact on the three innovation tasks of creation, adoption and diffusion.

On the other side, enforcing the project model may be perceived as the opposite of local autonomy. However, the subsidiaries do have a certain degree of autonomy, meaning that they may adapt the model to better suit the needs of their local business unit (TP1 2014). Given that the subsidiaries may adapt the project model it may create inter-subsidiary variations in how they work with innovation.

Enforcing a standardised project model on innovation projects affect the innovation activity at the subsidiary level. How it affects the innovation activity remains to be seen. Thus far this thesis has discussed characteristic of innovation and heterogeneity in innovation intensity of the subsidiaries. This section further indicates that there might be variations in how the subsidiaries work with innovation, due to local variations of a standardised model. These issues therefore raise the question of *how and why innovation activity varies across Telenor Group subsidiaries?* Furthermore, it raises a question about *what the implications of inter-subsidiary variation with regards to being an innovative MNC are?*

The next section will introduce the three subsidiaries: Telenor Pakistan, Telenor Bulgaria and Canal Digital AS (Telenor Broadcast), and is organised as follows: First, the subsidiaries will be analysed in terms of the characteristics of innovation at subsidiary level, including innovation expenditure and current innovative activity. Second, it will analyse of the process of 'creation' through the innovation processes, and further adoption and diffusion of innovation. Third, it will analyse subsidiaries structural position in Telenor Group in terms of being globally integrated and/or locally responsive. Lastly, it will discuss managerial implications of the findings at subsidiary level. Following the three separate analyses, this section will further compare the findings in the subsidiaries and discuss what the findings may mean and how the findings resonate with the theoretical framework.

4.5 Telenor Pakistan

After acquiring a GSM[16] license in 2004, Telenor Group commenced its operation in Pakistan in 2005. Telenor Pakistan is the second largest mobile operator in Pakistan, and currently has a 25% market share (Telenor Pakistan 2014). In 2013, total revenues were 5406 MNOK, originating from its 36.5 million mobile subscribers (Telenor Group 2014u; Telenor Pakistan 2014).

Besides mobile services, Telenor Pakistan offers mobile financial services across Pakistan, after acquiring the majority of shares (51%) in Tameer Microfinance Bank (Telenor Pakistan 2014). 'Easypaisa'[17] offers financial services to a share of the population in Pakistan who lacks access to ordinary banking services (Telenor Pakistan 2014). Financial services accounted for two-percentage point of the total increase in revenue of Telenor Pakistan in 2013 (Telenor Pakistan 2014). Telenor Pakistan innovation expenditure in 2013 are illustrated in figure 4.5.

Figure 4.5 Innovation expenditure Telenor Pakistan 2013
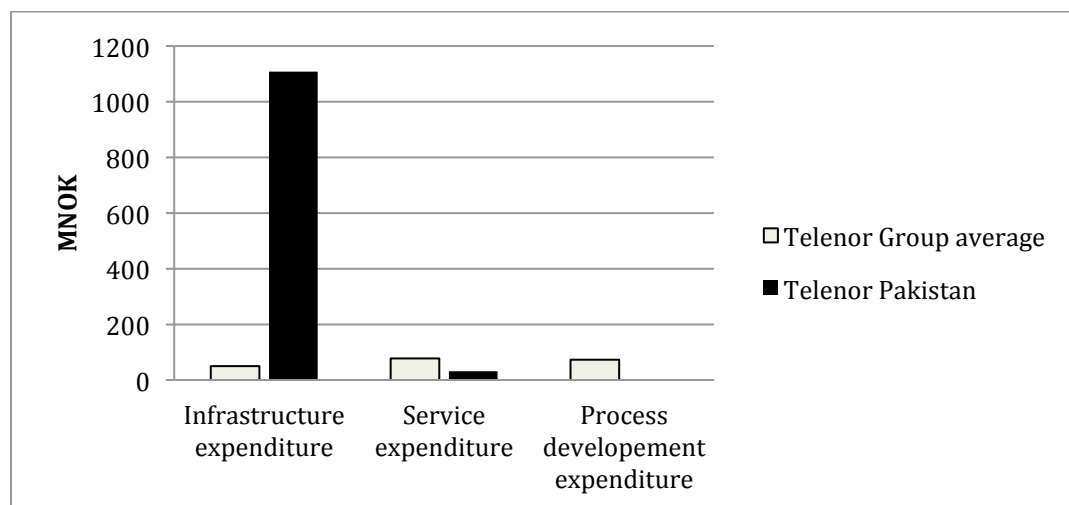
Pakistan has had an underdeveloped telecommunications infrastructure (Evans 2013), subsequently Telenor Pakistan's innovation work and expenditures is associated with developing basic telecommunication infrastructure (Telenor Group 2013; Hallingsby and Hildrum 2014). In 2013, Telenor Pakistan reported infrastructure investments categorized as

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[16] Second generation (2G) digital cellular network used by mobile phones
[17] launched in 2009

'innovation' of 1.1 BNOK, accounting just short of 13% of the total infrastructure investments in the Telenor Group. The (below-average) investments in services are mainly related to "branchless banking services' i.e. 'Easipaisa' as previously introduced. The modest investments in processes are mainly associated with the project of 'closed customer feedback loop.' This is new process to include the customer by gathering insight in all touch points between Telenor Pakistan and the customer. The information is further utilized in product and service development (Simensen 2014 p. 21). In this case study, Telenor Pakistan is the subsidiary with the lowest 'innovation intensity'. Even though Telenor Pakistan has comparatively high innovation expenditure, its breadth of technological disciplines and number of innovation projects is comparatively low.

The telecommunication industry in Pakistan is characterized by intense competition and rivalry for subscribers, and revenue amongst the main operators in Pakistan. Furthermore, as the rate of subscriptions started to decrease in 2011/2012 the focus has been on creating value-added services (Evans 2013) i.e. services that extend beyond the core operations of a telecommunications company.

Furthermore, innovation in Telenor Pakistan is characterized by a risk-aversion culture and a focus on short-term targets (TP1 2014; TP3 2015). Due to the performance evaluation processes and HR practices, employees of Telenor Pakistan "*focus on this month, this quarter, this years targets when you try to do something new it gets buried down in the prioritization process, because you don't know what kind of money you will get from it*" (TP3 2015) Thus, there is a risk aversion towards (radical) innovation projects in which the outcome is not certain, leading employees to focusing on fulfilling their short-term target. These practices are suggested to hinder the innovation culture in Telenor Pakistan (TP1 2014). Furthermore, there is an innovation team in Telenor Pakistan, working on a range of innovation projects. The challenge is however, that besides the innovation title the innovation team has no autonomy, financial budget or extra resource allocation. Therefore, the team experiences constraints in developing and launching innovations (TP1 2014).

Though there are challenges related to innovation in Telenor Pakistan, there is a lot of on-going activity. This includes "Product development Academy", a program started in collaboration with Lahore University with the aim of establishing best practice when it comes to product development. PACE - "Managing Project Portfolios through Agile and

Collaborative Execution" is a project for prioritizing projects and managing resources to keep them aligned with the aggregate level strategic ambition.

This section has discussed some general characteristics of Telenor Pakistan. The focus will now turn towards creation, adoption and diffusion of innovation (Ghoshal and Bartlett 1988).

4.5.1 Creation

Subsidiaries effectiveness in creating local innovation is critical to the ability of satisfying local needs in the different environments subsidiaries operate in (Ghoshal and Bartlett 1988). This section will first discuss 'creation' in terms of the innovation processes in Telenor Pakistan. The starting point of analysing this subsidiary's innovation processes is the Telenor project model presented in chapter 4.4. Further, this section will discuss three organizational attributes affecting 'creation' - local autonomy, local slack resources and density of communication with other subsidiaries (Ghoshal and Bartlett 1988), and how these may affect the processes of creation in Telenor Pakistan.

Telenor project model

The drive for industrialization and standardization, as previously noted, has imposed a standardized project model in Telenor Pakistan. Shortly after operations commenced in Pakistan in 2005 the Telenor project model was implemented (TP1 2015). All projects (innovation or otherwise) use the Telenor project model (TP1 2014).

Telenor Pakistan has somewhat moderated Telenor's project model. 'Telenor Pakistan product development model' consists of an additional three phases and two decision points compared to the original model (Telenor Pakistan 2014d). Subsequently, 'Telenor Pakistan product development model' consists of eight phases and seven gates decision points, as Figure 4.6 illustrates.

Figure 4.6 Telenor Pakistan's product development model
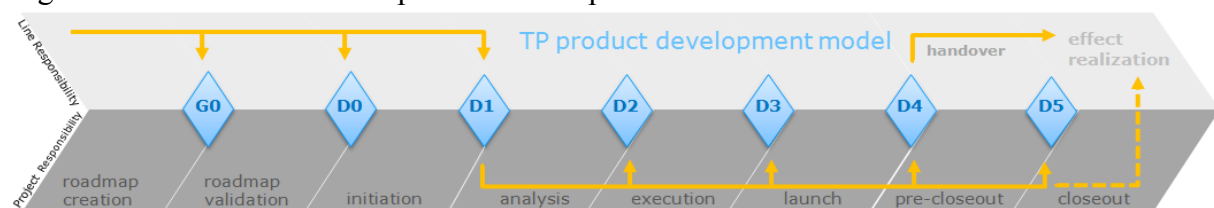
Adapted from: Telenor Pakistan 2014d

Project management as a formal practice, is not well established in Telenor Pakistan and is thus the rationale behind adding new phases and decision points to the original model (TP1 2014). There was a need to formalize additional processes (i.e. gates and decision points), to ensure a holistic approach to project management. Another reason for adding additional phases and decision points was that the model's original application was to large infrastructure projects, which characterized Telenor Pakistan when they commenced their operations in Pakistan in 2005. Such CAPEX and hardware intensive projects are complex and required a highly structured approach to ensure successful project realization.

The manager of innovation and Internet solutions points out that the model increases governance and control in innovation projects. Further, the model ensures, to a higher degree, effective allocation of resources to achieve business objectives (TP2 2015). On the other hand, the innovation manager points out that initiatives focusing on standardization of practices "*act as a barrier to innovation, flexibility or coming up with new ideas*" (TP1 2014). Though the model is considered by the manager of innovation and Internet solutions in Telenor Pakistan to stifle experimentation and innovation, there are a number of projects that successfully have utilized the product development model in developing and launching innovations. Two such examples are the charging and billing swap project (Trango) and the online self-learning portal (Cloud Campus) (TP2 2015).

Aside from the imposed standardized project model, there are two other innovation processes evolving in Telenor Pakistan - open innovation and revenue share projects.

Open innovation[18]
Telenor Pakistan utilizes open innovation for new product development, introduction of new business models and new revenue streams. Subsequently, Telenor Pakistan is in the domain of open innovation focusing on establishing alliances with software solutions providers, universities and technology incubation houses (TP1 2014). Following is an example of open innovation activity in Telenor Pakistan.

 In collaboration with one vendor, Planet Beyond, a team headed by the manager of innovation and Internet solutions developed an application (app) for smartphones. This app is a highly innovative service in the Pakistan Telecom market. The app enables free delivery of

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[18] Open innovation is defined as "*the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively*" Chesbrough 2006 p.1.

online and offline calls, text messages, and a customized social media feed, without the operator (Telenor Pakistan) controlling or distributing the content to its users (TP1 2014).

The point of this example is that the development did not follow the normal product development methodology i.e. 'Telenor Pakistan product development model'. The innovation team has successfully developed the app, and is now in the phase of designing go-to-market. Due to the use of open innovation as opposed to the product development model, the app development has relatively speaking been a swift process. The respondent claims that if the product development model had been deployed to the project, it would still have been in the initiation phase (TP1 2014). As the manager of innovation puts it: *"... we have experimented with open innovation, and it worked"*.

One interesting finding from the qualitative interviews is that once an innovation has been created in the process of open innovation and is ready to launch, it has to go through some of the standardized steps of the 'Telenor Pakistan product development model'. The example outlined above may illustrate this. The app is developed. However, now it has to go through formal procedures of lodging requests to the charging and billing department as well as the sales and distribution department. Thus, though open innovation has been deployed in creating the innovation, the output still have to go through a substantial part of the same steps of the Telenor Pakistan product development model.

Besides the product development model and open innovation there is a third innovation processes in Telenor Pakistan – revenue share projects.

Revenue Share Projects
Revenue share projects, known as 'white label services', are products or services developed by an external vendor, which Telenor Group rebrand and market under the Telenor brand. These projects require no investments from Telenor Pakistan because the external vendor will own the servers, hardware, the application, licensing expenditure and so on, but in return the revenues from that service is shared[19] between Telenor Group and the vendor (TP1 2014).

One example of a revenue share project is a current arrangement with Deutshe Telekom. Deutshe Telekom has developed an IPTV application, which besides being a TV guide and

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[19] usually 70/30 in Telenor's favor, but there are varying contract i.e. a minimum monthly guarantee for the vendors

use your phone as a TV remote control, offer a cloud service where you can access data (videos and photos for example) on you TV (Deutshe Telekom 2015). The application has been re-branded and launched to Telenor Pakistan's customers (TP1 2015).

The product development department has recently redefined the terms of engagement in how they work with solution vendors. The manager of innovation in power of the product development department wishes to go into a partnership mode in which they create products and services together with external vendors i.e. moving towards open innovation. The goal for the product development department is to create Intellectual Property (IP) themselves, in the sense that they are creating something from scratch thus, moving away from external development.

One interesting findings from the qualitative interviews was the emergence of three parallel processes of innovation occurring in Telenor Pakistan – the Telenor project model, open innovation and revenue share projects (external vendor development). Subsequently the innovation model of Telenor Pakistan may be illustrated by the following figure:

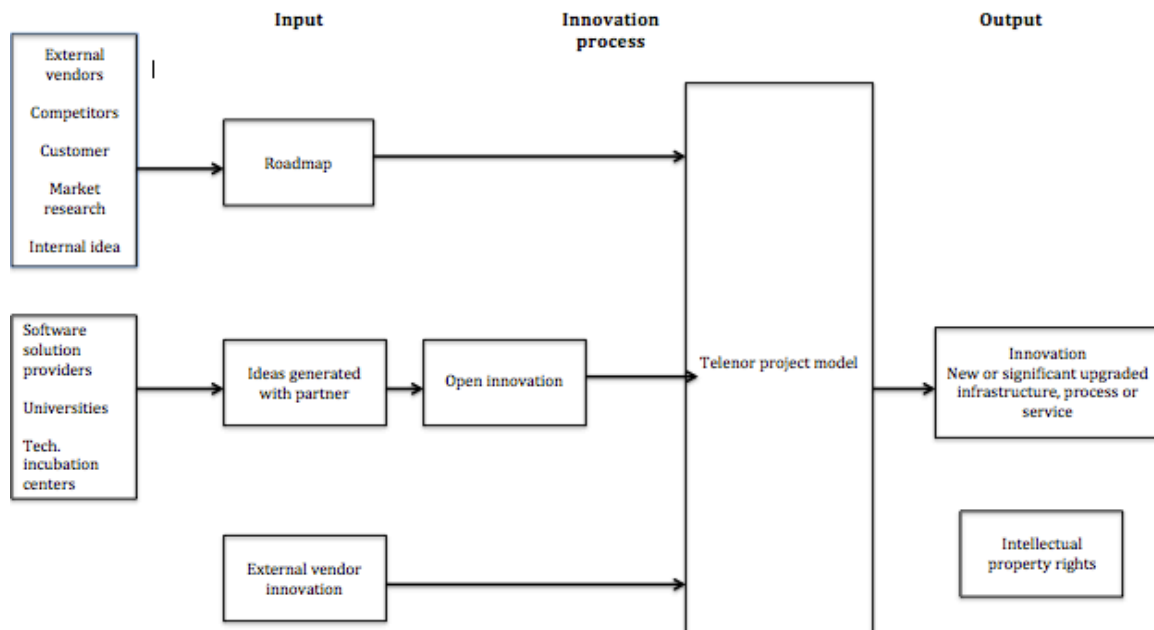Figure 4.7 Innovation processes in Telenor Pakistan

Figure 4.7 illustrates the complex process of innovation in Telenor Pakistan. As the model illustrates, there are several input factors to the innovation processes of Telenor Pakistan. This is in line with the rejection of the linear model of innovation (Kline and Rosenberg 1986) i.e. basic research is not necessarily the starting point of an innovation process.

Furthermore, the model illustrates another interesting finding. Regardless of the processes which innovations have been invented through, projects have to go through some of the standardized step of the Telenor product model. Some projects may be fast-tracked in terms of getting a higher priority, but projects still have to go through the same steps of the model (TP1 2014; TP3 2015). Thus, even though Telenor Pakistan has a certain degree of autonomy in deciding how to work with the project model, the model enforces a particular way of work regarding innovation in the subsidiary. The findings of Ghoshal and Bartlett (1988) were not conclusive with regard to local autonomy's effect on the innovation tasks of creation. The findings in Telenor Pakistan seem to indicate that local autonomy has led this subsidiary to create its own set of innovation processes, which in comparison to the other two subsidiaries are specific for Telenor Pakistan.

A further organizational attribute that may affect and thus create variations in this innovation task is the degree of local slack resources. Local slack resources refer to whether organizational assets and resources such as R&D are centralized or decentralized (Ghoshal and Bartlett 1988). In Telenor Group research is, as noted, centralized to RFS. Innovation on other hand is occurring both centrally and in the local subsidiaries. More over, local slack resources may be discussed in terms of budgetary resources (Ghoshal and Bartlett 1988; Di Norcia 1991). In Telenor Group a significant part of the resources is controlled by the subsidiaries themselves (TP3 2015). However, there as the analysis will discuss there may be varying degrees of local slack resources, that may generate differences in the innovation task of creation (Ghoshal and Bartlett 1988)

 In Telenor Pakistan several respondents (TP1 2015; TP3 2015) maintained that there were not enough resources for innovation. This may be explained by Telenor Pakistan's high innovation expenditure on infrastructure, in which there may not have been budgetary resources for other innovation projects. Consequently, innovation projects have to fight for

prioritization and resources alongside other innovation or non-innovation related projects (TP1 2015).

As noted, total revenue of Telenor Pakistan in 2013 amounted to 5406 MNOK, this is significantly higher than Telenor Bulgaria (1151 MNOK). As a result, Telenor Pakistan might have more local slack resources for innovation than the latter. A higher degree of local slack resources may lead to increased creation and diffusion of innovation (Ghoshal and Bartlett 1988). However, in this study this is not the case. If one measures creation by innovation expenditure Telenor Pakistan may be considered to have a higher degree of creation than Telenor Bulgaria. However, if creation are measured by the number of innovation projects Telenor Bulgaria had over 40% more innovation projects and a greater breadth of technological disciplines in 2013, compared to Telenor Pakistan. Overall, Telenor Pakistan's innovation intensity is low compared to Telenor Bulgaria. Therefore, the findings of this study are not in line with Ghoshal and Bartlett's (1988) suggestion that higher local resources lead to higher creation of innovation.

Besides the innovation task of creation that has been discussed, Ghoshal and Bartlett (1988) suggests that adoption and diffusion of innovation characterizes innovation in a MNC. The two innovation tasks will briefly be discussed below.

4.5.2 Adoption

The process of adoption is central to an MNC's ability to practice a global integrated strategy. The subsidiaries may adopt innovation created by the parent company or other subsidiaries (Ghoshal and Bartlett 1988). In Telenor Pakistan it was found, in line with the study of Ghoshal and Bartlett (1988) that both local autonomy and density of internal communication affect its adoption of innovation. Like the other subsidiaries, Telenor Pakistan has the autonomy to decide whether they want or have need for innovation created by Telenor Group or other subsidiaries. The music-streaming service Wimp will illustrate this, later in this section.

It was suggested by two of the respondents (TP1 2014: TP2 2015) that Telenor Pakistan is more likely to adopt innovations from the Asian subsidiaries, which Telenor Pakistan have more dense communication and collaboration with. One reason for a high density of communication may be that the Asian subsidiaries are operating in similar environments

(TP1 2014). Thus, a greater likelihood of adoption from the Asian subsidiaries is explained by denser communication between the Asian subsidiaries (TP1 2015; TP3 2015). This is in line with the suggestions of Ghoshal and Bartlett (1988). The respondents (TP1 2015; TP3 2015) explained that more communication leads to more insight into the innovation projects of the Asian subsidiaries. This provides better ground to consider whether it is relevant for Telenor Pakistan to adopt those innovations. However, the qualitative material also suggests in Telenor Pakistan, besides corporate infrastructure, has little as 5% of innovations are adopted from Telenor Group or other subsidiaries (TP3 2015).

4.5.3 Diffusion

The subsidiaries may diffuse an innovation it has created to the parent company or other subsidiaries. The ability of MNC subsidiaries in diffusing innovations enables the MNC to exploit economies of scope related to the learning embedded in geographically dispersed subsidiaries (Ghoshal and Bartlett 1988). One example of this innovation task is the diffusion of financial services by Telenor Pakistan (TP1 2014). Telenor Pakistan launched 'Easypaisa' i.e. branchless banking in 2009. The financial service innovation has been diffused to other subsidiaries such as Telenor Serbia; there are further plans to launch these services in Telenor Bulgaria. However, it should be noted that due to differences in the regulatory environments and markets these subsidiaries operates in, there have to be altercations to this innovation.

Internal communication is shown to have a positive association with diffusion of innovation (Ghoshal and Bartlett 1988). As noted, Telenor Pakistan has more dense communication and cooperation with the Asian subsidiaries. The example of the music-streaming service Wimp may illustrate this. The innovation project was initiated by Telenor Bangladesh, and subsequently diffused to Telenor Pakistan and Uninor (Telenor India), whereas two Asian subsidiaries declined. Thus, the innovation was diffused to the subsidiaries in which Telenor Bangladesh had more dense communication with. Furthermore, this example illustrates how local autonomy may impede diffusion (Ghoshal and Bartlett 1988). DiGi (Telenor Malaysia) and dTac (Telenor Thailand) declined the innovation on ground that the subsidiaries did not need that service. This may illustrates the interaction of organizational attributes. The attributes may be conflicting (Ghoshal and Bartlett 1988), therefore the interaction between conflicting attributes may cause different outcomes in different situations.

This section has discussed general characteristics of Telenor Pakistan, including its market, innovation expenditure and on-going innovation activity. Furthermore, this section has discussed the three innovation tasks of creation, adoption and diffusion. These have been analysed using the organizational attributes of density of internal communication, local slack resources and local autonomy, which suggestively affect the innovation tasks (Ghoshal and Bartlett 1988). The next section will discuss Telenor Pakistan's structural position in terms of global integration and local responsiveness (Marin and Bell 2005), and how this may affect its innovation activity.

4.5.4 Global integration and local responsiveness

In Telenor Pakistan there is a combination of global integration and local responsiveness. One respondent suggests that about 95 % of the current projects have been initiated by Telenor Pakistan (TP3 2015). Whereas the manager of innovation suggests that the number is somewhat lower. Currently, the products and services in Telenor Pakistan are to a large extent adapted to local market needs (TP1 2015).

The assistant manager of new strategy and new business development illustrates the need for local responsiveness with the current initiative of creating a single application store for all subsidiaries in the Telenor Group. Creating a single application store is an initiative from Telenor Digital, and part of global backend services. The mandate of global backend services is, amongst other things, to create a standardized platform so all service and partner only have to integrate their systems and offerings towards one global platform (i.e. global integration), and not all the platforms of the specific subsidiaries. In this manner the subsidiaries can "plug-in" and distribute the available services in its markets (Telenor Group 2015a). The point is that Telenor Pakistan has a need to adapt its products and services to the local user requirements. One respondent (TP3 2015) exemplifies: "*my consumer does not want to see anything on sex, or any females with little clothes on, it might even just be a game you know, but they don't want to see that*". There is a different tolerance of sexual content in the European and the Asian markets. One central applications store may have content that offend Pakistani customers. This is one specific reason why there is a need for local responsiveness in Telenor Pakistan (TP3 2015).

The same respondent points out that the involvement from Telenor Group has grown exponentially over the last two year. The involvement of Telenor Group is perhaps evident on

two different levels. Firstly, in terms of specific standardized product and service offering from Telenor Group or other subsidiaries that they are trying to sell to Telenor Pakistan. One such example includes the, already discussed, global backend applications store developed by Telenor Digital. Second, the involvement of Telenor Group may be seen in terms of corporate functions, such as procurement, finance, HRM and IT infrastructure and systems.

The extent Telenor Pakistan is inclined towards global integration, may become apparent on a more aggregated level. There is a higher degree of global integration in areas such as procurement, HR operations, IT infrastructure and corporate communications. Telenor Pakistan is also moving towards global integration in matters such as network, billing and CRM (TP3 2015; TP1 2015).

There is a strong focus on architecture standardization, harmonization and simplification across the Asian markets, following the industrialization across Telenor Group, discussed in chapter 4.4. Telenor Pakistan has done a billing and charging platform swap. During that process there was focus on the need to reduce customization of products, in which the Group communicated that Telenor Pakistan should implement a solution that is a "off the shelf" product. In this example the customization was reduced for the overall business requirements, so that Telenor Pakistan's current billing and charging platform is "*over 90% off the shelf*" (TP1 2015). There is a similar situation in regards to CRM. Telenor Pakistan is planning a CRM platform swap, and the need for buying 'off the shelf' products is stressed by Telenor Group. According to the respondent 'off the shelf' products do not mean that Telenor Pakistan is becoming less locally responsive, rather it means that "*you have to be more creative and innovative in trying to understand the need of the customer, and offer solutions that are according to those needs*" (TP1 2015).

4.5.5 Key findings and implications for managing innovation in Telenor Pakistan

The telecommunications market in Pakistan is characterised by intense competition for subscribers. The rivalry has intensified as the rate of subscriptions began to decrease in 2011/2012 (Evans 2013). Thus, the market has moved into a more mature phase, in which the focus has moved from offering basic telecommunications services towards offering value-added services to the customers (Evans 2013).

Parallel to this development Telenor Pakistan has gone from being a greenfield investment[20] when Telenor Group commenced its operations in 2005 to being a more mature subsidiary (TP1 2014). Among other things, this transition means that Telenor Pakistan has become a more inflexible organization, due to the introduction of control mechanisms (TP1 2014). The control mechanisms have resulted in the introduction of information security controls, risk management protocols, sourcing/procurement guidelines and audit processes to innovation projects, resulting in a more rigidified process than before (TP1 2014). Furthermore, the introduction of control mechanisms relate to a risk-aversion culture and a focus on short terms targets in Telenor Pakistan, stressed by several of the respondents (TP1 2014; TP3 2015).

Telenor Pakistan's innovation expenditure is related to heavy investments in Pakistan's underdeveloped infrastructure. Consequently, Telenor Pakistan's breadth technological breadth in innovation projects is comparatively low to the two other subsidiaries. Telenor Pakistan is the subsidiary with the lowest innovation intensity in this study.

Innovation in Telenor Pakistan is further characterised by three innovation tasks: creation, adoption and diffusion (Ghoshal and Bartlett 1988). Regarding creation, this study has found three innovation processes in Telenor Pakistan - Telenor project model, revenue share projects and open innovation. Telenor Pakistan has exercised its local autonomy in adapting the Telenor project model to its own needs.

Some of the respondents (TP1 2015; TP3 2015) suggested that Telenor Pakistan has a low rate of adoption of innovation from other subsidiaries. Telenor Pakistan may exercise its local autonomy in deciding which innovation it has a need for adopting. In instances where innovations are adopted, it is more likely that the innovations originates from Asian subsidiaries that Telenor Pakistan has more dense communication and collaboration with.

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[20] Greenfield investment is the creation of a subsidiary from scratch by non- resident investors (OECD 2004)

Diffusion of innovation was exemplified by the diffusion of Telenor Pakistan's financial service 'Easypaisa'. However, this innovation may not be diffused as-is, due to differences in the regulatory environments the different subsidiaries operate in.

Regarding Marin and Bell's (2010) structural positions, there seems to be a strong drive for local responsiveness in Telenor Pakistan. This is apparent by the fact that most development projects are locally initiated and developed for the Pakistani marked. Further, services from the global backend platform is adapted to fit local market requirements (TP1 2015; TP3 2015). The pressure for global integration is increasing and occurring on two different levels. Global integration in Telenor Pakistan is present in terms of the global backend platform and its related service offerings, as well as through higher-level functions. Both forms of integration strive for standardization across to enable a decrease in expenditure and an increase in the speed of delivery of new processes and services.

Implications

The main findings in Telenor Pakistan have several implications for managing innovation in this subsidiary. The market situation in Pakistan implies a shift of focus from providing basic telecommunications services towards value-added services. This implies that Telenor Pakistan should shift their focus of innovation towards services. It is likely that this is now possible as the basic telecommunication infrastructure in Pakistan is now in place.

The managerial implications of standardisation of innovation processes and the implementation of control mechanisms in the innovation processes are aversion to risk and a focus on short-term targets in Telenor Pakistan. According to one respondent, this implies an aversion towards (radical) innovation projects, as there is less willingness to support projects in which the outcome is uncertain (TP1 2015). This is a paradox, as uncertainty is a key characteristic of innovation (Jalonen 2012). The implications of control mechanism relates to the innovation processes itself. A rigidified process "*stifle experimentation and discourage risk taking*" according to one respondent. The same respondent stresses that "*breakthrough innovation cannot flourish in such environment*" (TP1 2014).

This may imply a culture where innovations that are more radical are discouraged, and the focus is on incremental innovations yielding short-term benefits to the subsidiary. There is

not necessarily a need for radical innovation in Telenor Pakistan. However, the implications of discouraging risk-taking through control mechanisms and standardised processes, may dissuade employees of thinking outside the box. Consequently, there may be unexploited potential and ideas in the subsidiary that are not made use of.

The high density of internal communication with the Asian subsidiaries should be substantiated as it is associated with higher presentations in all three innovation tasks (Ghoshal and Bartlett 1988). However, if the main cooperation effort is limited to the Asian subsidiaries due to similar environments, it may limit Telenor Pakistan's possibilities of adopting from, and diffusing innovation to other subsidiaries.

Respondents of this study suggest that Telenor Pakistan has a low rate of adoption of innovation from other subsidiaries. This may imply a risk of double efforts, meaning that more or less the same developmental effort may be occurring in another subsidiary. In these situations is likely that it is more cost-efficient for Telenor Pakistan to adopt an innovation as opposed to develop it in-house (TP1 2015; TP3 2015).

The managerial implications of a high level of local responsiveness may be a higher level of innovative activity in Telenor Pakistan, as it enables the subsidiary to deliver on local user needs (Marin and Bell 2005). This may be important given the competitive situation in the Pakistani market. Despite Telenor Pakistan having a high level local responsiveness, do the innovation expenditure from 2013 not reflect a higher level of local innovation activity, compared to the other subsidiaries. The innovation expenditure of Telenor Pakistan has been characterises by heavy investments in infrastructure. These investments have been a prerequisite for product, services and process innovations (TP1 2014). There is increasing local innovative activity in Telenor Pakistan, apparent by the many local initiatives, and projects, including the two presented in chapter 4.5 (Simensen 2014; TP1 2014). It may be suggested that Telenor Pakistan is increasing starting to show signs of higher local innovation activity. This may imply that both Telenor Pakistan and Telenor Group should focus on maintaining the high level of local responsiveness, as it may over time increase the level of local innovation activity in Telenor Pakistan (Marin and Bell 2005).

On the other hand, global integration enables cost saving benefits (Birnik 2007; Marin and Bell 2005). It may further make it easier to adopt and diffuse innovations (Bartlett and Ghoshal 1988) if innovations are built on the same platform, like the global backend services.

4.6 Telenor Bulgaria

The 1st of August 2013 the Telenor Group acquired a 100% owner share of the Bulgarian mobile operator Globul. Telenor Bulgaria is the second largest mobile operator in Bulgaria. Telenor Bulgaria's 4 million subscribers equals to a market share of 36% in the consumer market (Telenor Group 2013). Figure 4.8 illustrates innovation expenditure of Telenor Bulgaria in 2013.

Figure 4.8 Innovation expenditure Telenor Bulgaria 2013
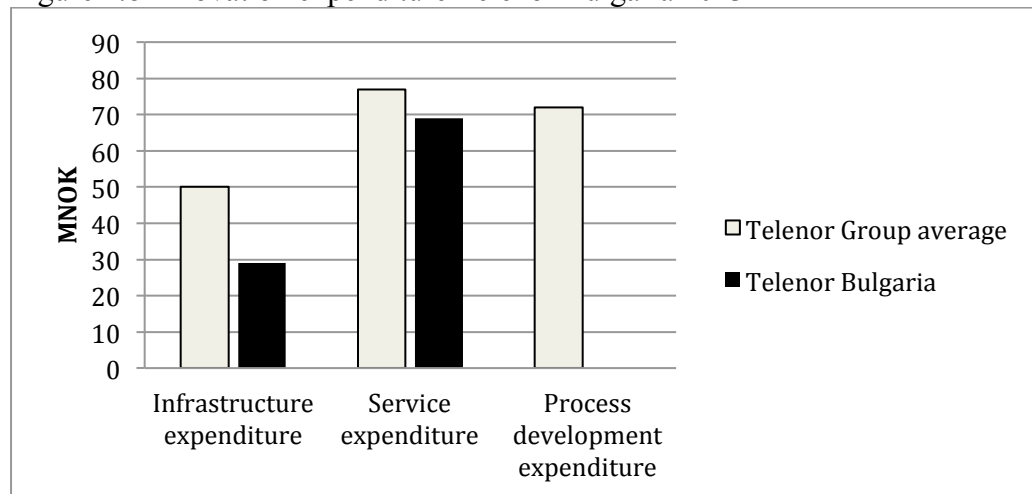
In relation to Telenor Bulgaria's investment patterns there are above average expenditure in both infrastructure and services. The expenditures are related to a network swap. This major project entails a swap of the 2G and 3G network and replacement and upgrading of the core network and all related services (Hildrum and Hallingsby 2014). The investments in 2013 were stable compared to 2012, and the major part of Telenor Bulgaria's investments relates to the rollout of 3G and 4G networks (Telenor Group 2013). The current investments in infrastructure and services are anticipated to enable innovations in services and processes, in the future (Telenor Bulgaria 2015).

Service expenditure in Telenor Bulgaria is also above average. Some of these expenses relates to the network swap, as this project entails significantly upgrading the service offerings to Telenor Bulgaria's customers. Furthermore, they include projects such as billing development, Customer Relationship Management (CRM) developments, customer service tools such as video offers and a new prepaid platform. There are no registered process investments from 2013 (Hildrum and Hallingsby 2014). Telenor Bulgaria has a higher

innovation intensity compared to Telenor Pakistan. Its innovation expenditure is somewhat lower, but a greater breadth of innovation projects, both in terms of the number of on-going projects and the extent of technological disciplines, provides an overall higher intensity score for this subsidiary.

Activity linked to innovation in Telenor Bulgaria is somewhat immature. Telenor Bulgaria is in the middle of a profound transformation period, following the acquisition by the Telenor Group (TB2 2015). During the two-year sales process there were no developmental activity in Telenor Bulgaria. After the Telenor Group acquired the company, the focus has been on 'fixing things' (TB1 2015). Thus, the focus has been on upgrading infrastructure, and projects related to transforming Telenor Bulgaria to becoming a Telenor Group company (TB1 2015). Consequently there has been a three-year gap (2011-2014) without focus on innovation (TB1 2015). In 2014, there were executed major enterprise projects, and such projects will continue throughout 2015-2017 (TB2 2015). These major enterprise projects are mainly related to infrastructure; network swap and new site roll-outs (TB2 2015). Upgrading infrastructure, network and new site roll-out might be seen as a prerequisite for future innovation according to the senior strategy specialist, because *"if you come up with new thing and do not have the system to support it… I think it is useless"*.

This section has discussed some general characteristics of Telenor Bulgaria. The focus will now turn towards creation, adoption and diffusion of innovation (Ghoshal and Bartlett 1988). The analysis will focus on creation of innovation in relation to Telenor Bulgaria's innovation processes. Furthermore, the starting point of analysing this subsidiary's innovation processes is the Telenor project model discussed in chapter 4.4.

4.6.1 Creation

Subsidiaries effectiveness in creating local innovation is critical to the ability of satisfying local needs in the different environments the subsidiaries operate in (Ghoshal and Bartlett 1988). This section will first discuss the innovation processes in Telenor Bulgaria. Second, it will discuss three organizational attributes; density of internal communication, local autonomy and local slack resources (Ghoshal and Bartlett 1988), and how these may affect the processes of creation in Telenor Bulgaria.

Shortly after the acquisition in 2013 the Telenor project model was introduced (TP1 2015). Project management is not a strong feature of the corporate culture in Telenor Bulgaria, as

they are not accustomed to working in this manner (TB1 2015; TB2 2015). According to the respondents, Telenor Bulgaria does not apply the project model for every project. The model is applied in a pragmatic manner, meaning that the project manager would apply it as (s)he see fit (TB1 2015; TB2 2015). Whether the model is applied is also dependent on what department owns the project (TB1 2015). In large enterprise projects, such as the network swap, the model is strictly applied (TB2 2015). In addition, the commercial department resolutely follow the project model, in terms of satisfying the requirements for every gate and decision point (TB1 2015). The commercial department also have a structured go-to-market process, which add-up to the processes i.e. gates and decision point of the Telenor project model.

In comparison, the network department does not apply the model for every project, and in this department, it all depends on whether the project manager considers the Telenor project model of being useful or not. In projects where the standardized model is not applied, there is a more chaotic and less structured process. If a project is too small or not that important the project is, led by a project manager, executed on an ad hoc basis (TB1 2015).

Several factors might explain the lack of application of the model. Firstly, there has not been a corporate culture of project management in Telenor Bulgaria. It is less than two years since the company was acquired, and changing the way of work is not done in a heartbeat; *"the project management culture will be built throughout several years"* (TB2 2015). Further, given that Telenor Bulgaria is in the middle of a transition period, there is a certain time pressure due to the number of projects currently being executed, subsequently; *"we do not have the time to spend to do everything according to template"* (TB2 2015).

If a development project has not used the Telenor project model it may not go straight to launch. The project then has to go through the commercial department and a more formalized process. Thus, departments and project managers have a certain freedom to develop new products and services by whatever method they see fit, but they all have to go through the commercial department in the end. There is a cross-functional forum consisting of managers from the departments of IT, network, commercial, finance and service delivery. The forum will take the decision on whether the outcome of the development project will go forward to launch or not. In total: *"there are specific steps that you cannot miss"* (TB1 2015).

Revenue share projects and open innovation is a completely new thing for Telenor Bulgaria and currently they are discussing and designing such approaches. Subsequently, there is no such activity in Telenor Bulgaria for the time being (TB1 2015; TB2 2015).

A structured approach to the Telenor project model on one hand, and a more chaotic, less structured approach to innovation, characterizes the creation of innovation in Telenor Bulgaria.

The transformation phase that Telenor Bulgaria is in, affect all three innovation tasks, and the associated organizational attributes. The level of local slack resources affects the innovation task of creation (Ghoshal and Bartlett 1988). Telenor Bulgaria has low levels of local slack resources, as transformation of the subsidiary ties up the resources. Low levels of local slack resources are negatively associated with the degree of creation, adoption and diffusion. (Ghoshal and Bartlett 1988) However, Telenor Bulgaria has compared to other subsidiaries of this case study a fair amount (17) of innovation projects. The explanation of this may be that Telenor Group initiates, manages, and finances most of the current projects in Telenor Bulgaria (TB1 2015).

4.6.2 Adoption and diffusion

Because Telenor Group controls the transformation of Telenor Bulgaria, there is high level of adoption of innovation from Telenor Group and other subsidiaries. Ghoshal and Bartlett (1988) suggest that local autonomy of a subsidiary may constrain adoption of innovation. However, due to the transformation phase Telenor Bulgaria has lower levels of local autonomy, compared to the other two subsidiaries. Moreover, Telenor Bulgaria has dense communication with its neighbouring subsidiary Telenor Serbia, and Telenor Group, which is positively associated with the degree of adoption (Ghoshal and Bartlett 1988). Lastly, given that Telenor Bulgaria has a low level of local creation (i.e. most projects are managed by Telenor Group), there has not been accounted for any diffusion of innovation by this subsidiary (TB1 2015; TB2 2015).

This section has discussed general characteristics of Telenor Bulgaria, including its market, innovation expenditure and on-going innovation activity. Furthermore, this section has discussed the three innovation tasks of creation, adoption and diffusion. These have been

analysed using the organizational attributes of density of internal communication, local slack resources and local autonomy, which suggestively affect the innovation tasks (Ghoshal and Bartlett 1988). The next section will discuss Telenor Bulgaria's structural position in terms of global integration and local responsiveness, and how this may affect its innovation activities.

4.6.3 Global integration and local responsiveness

In Telenor Bulgaria there is a mixture of global integration and local responsiveness. Telenor Bulgaria is in some respects a special case because it has been newly acquired. The acquisition has resulted in a range of large enterprise projects being executed. These projects do to a large extent lean towards global integration. These projects are related to that Telenor Bulgaria has had to do some 'foundation projects' i.e. upgrading and building basic infrastructure, certain common IT infrastructure, functions such as investment committees and processes, enabling Telenor Bulgaria to become a Telenor Group company (TB2 2015).

Telenor Bulgaria has a strong collaboration with Telenor Group, however the CEO[21] and CFO[22]s have focus on keeping a balance between Telenor Group initiated projects and the independence of the subsidiary. As the prerequisites of being a company in the Telenor Group are near completion, the focus of innovation projects are starting to shift towards the local needs of the Bulgarian market. It is entirely up to the CEO of Telenor Bulgaria to initiate, decide, and execute these projects, therefore local projects are not initiated nor controlled by Telenor Group (TB2 2015).

In terms of local responsiveness, the respondents agree that Telenor Bulgaria is more leaned towards local needs, and that Telenor Bulgaria attempts to adapt whatever products and services available in from Telenor Group and other subsidiaries to local market needs (TB 12015; TB2 2015). For instance Telenor Bulgaria is focusing on the major revenue generating customer segments – "lifetime maximalists" and "progressive performers" and strives to tailor their products and services offering towards the preferences of these groups.

Telenor Bulgaria is not yet part of the global backend services, discussed in relation to the application store example in Telenor Pakistan. However, they are planning to purchase these

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[21] Chief Executive Officer
[22] Chief Financial Officers

services during 2015. According to one respondent Telenor Bulgaria will adapt potential purchased product and services from the Telenor Group to their local market needs (TB2 2015). The project and portfolio expert (TB2 2015) stresses the need for a balance between global integration and local responsiveness, because "*there are some local specifics of the market that have to be taken into account, we can't just copy-paste*". Another respondent point out that several projects currently cannot be scaled, for example as the population in Bulgaria is growing older so they have to focus on how to stimulate internet usage by the elderly. The respondent is not sure whether that is applicable in the Asian markets, where it is the other way around (TB1 2015). Telenor Bulgaria attempts to be locally responsive in focusing on local market needs. However, given the transformation phase, this subsidiary currently has a higher level of global integration.

There are several specific characteristics of Telenor Bulgaria, which separates it from the other two subsidiaries and have implications for the management of innovation in this subsidiary. This will be discussed in the following chapter.

4.6.4 Key findings and implications for managing innovation in Telenor Bulgaria
Following Telenor Group's acquisition of Global in 2013, there has been a price war in the Bulgarian telecommunications market, initiated by the competitors. This has forced Telenor Bulgaria to think about proactive moves and thus creating a need for innovation.

Telenor Bulgaria is the second largest mobile operator in Bulgaria (Telenor Group 2013). However, Telenor Bulgaria has significantly lower revenues (1151 MNOK), compared to Telenor Pakistan (5406 MNOK) in 2013, partly explained by the price war, which has resulted in lower rates and thus lower revenue (Telenor annual report 2013). Furthermore, Telenor Bulgaria is a less mature subsidiary than Telenor Pakistan, with focus on basic services as opposed to value-added services that may generate more revenue for the subsidiary, such as 'easypaisa' and 'Wimp' in Telenor Pakistan.

As noted, Telenor Bulgaria is an immature Telenor Group subsidiary. The focus has been on upgrading infrastructure and systems in transitioning the subsidiary to become a Telenor Group company. Therefore, above average expenditure in infrastructure and services characterises innovation in Telenor Bulgaria. These investments are seen as a prerequisite for

innovation in the future (TB1 2015). Consequently, there has been less focus on innovation extending beyond upgrading infrastructure, networks and support systems.

Telenor Group largely controls creation of innovation in Telenor Bulgaria (TP1 2015). Regarding innovation processes, Telenor Bulgaria has loosely implemented the Telenor project model, and project management per se is not a strong feature of their corporate culture. The Telenor project model is strictly applied in large enterprise projects and in the commercial department, whereas other departments may apply a more unstructured version of the model, or just work on projects on an ad hoc basis, all depending on the manager leading the project.

Furthermore, Telenor Bulgaria has a high rate of adoption of innovation, compared to the other two subsidiaries. This may be explained by several factors, for instance low levels of local autonomy, and a high density of internal communication with other subsidiaries and Telenor Group (Ghoshal and Bartlett 1988). Lastly, due to the lack of local created innovations in Telenor Bulgaria, there has not been any diffusion of innovations (TP1 2015).

In relation to the degree of global integration and local responsiveness it was found that due to the transformation phase the subsidiary is in, there is a high degree of global integration. However, there are increasingly initiatives that focus on being locally responsive and addressing the competitive situation. The respondents also stressed that the subsidiary attempt to adapt whatever products and services available from Telenor Group to the local market needs in Bulgaria. Even though Telenor Bulgaria is starting to enter a phase of more locally driven initiatives and innovation projects they are still closely monitored and controlled by the Telenor Group (TB2 2015).

Implications

The competitive situation in the Bulgarian market implies a need for innovation in Telenor Bulgaria. Innovation may according to the OECD (2005) lead to increased efficiency and reduced cost. Furthermore, innovation may enable Telenor Bulgaria to charge a higher price for it product and services (OECD 2005), thus moving away from the price war.

The implications of the current innovation processes in Telenor Bulgaria are a somewhat unstructured approach to innovation. This means that there is no continuity in applying Telenor project model (or any other model for that matter) across the subsidiary; rather it is more up to the specific manager. This implies that innovation processes and its outcome become more dependent upon project managers. This may raise several concerns. As noted in the analysis there has been little focus on innovation in the previous Globul and now Telenor Bulgaria. Thus, the respondents (TB1 2015; TB2 2015) points out that there is a lack of a culture and a mind-set for innovation in the subsidiary. This may imply that there is a need for a standardised innovation model and a more strict application of it, thus making innovation projects less dependent upon the people who are managing it. Furthermore, given that there is not a culture of working with innovation, the question - to what extent may the projects be assured of quality if the Telenor model is not applied, arises.

Though the fact that Telenor Group is controlling the creation of innovation in Telenor Bulgaria may ensure that the subsidiary is transformed into a Telenor Group subsidiary, this may further inhibit Telenor Bulgaria's ability to be innovative.The previous company, Globul, has not had a culture for innovation. If the creation of innovation is centrally driven and there is a high level of adoption of innovation, it may imply that Telenor Bulgaria's ability to create local innovations and in extension diffuse them, remains immature.

High density of internal communication with Telenor Group and other subsidiaries, in addition to a high degree of cooperation with Telenor Group following the transformation phase may on the other side increase Telenor Bulgaria's normative integration in Telenor Group. Normative integration entails having shared strategy, goals and values (Ghoshal and Bartlett 1988), subsequently normative integration may be an element in building a culture for innovation in Telenor Bulgaria.

The current transformation phase of Telenor Bulgaria implies that the subsidiary has less possibility to exercise it local autonomy, which is reflected by its high degree of global integration. A high degree of global integration may enable cost-efficiency for Telenor Bulgaria, as the unit price of an innovation decreases for each unit it is scaled to (TP3 2015). However, adopting scaled innovation may imply a weaker satisfaction of local user needs (Ghoshal and Bartlett 1988; Marin and Bell 2005) thus, the need for a balance between the two positions.

A high degree of global integration and low levels of local autonomy, paired with the lack of a culture of innovation may explain and imply a comparatively lower level of local innovative activity in Telenor Bulgaria. However, due to the immaturity of the unit, centrally driven innovation and a high level of adoption may be what this subsidiary needs at this moment.

4.7 Telenor Broadcast – Canal Digital AS

Telenor Broadcast consists of three subsidiaries: Canal Digital AS, NorKring[23] and Satellite Broadcasting[24] (Telenor Group 2015). In 2013, total revenues for Telenor Broadcast amounted to 6735 MNOK, an increase of 3% from 2012 (Telenor Group 2013).

In 1997, Telenor Group established various small cable companies and subsequently formed 'Canal Digital' in cooperation with the French premium TV channel Canal+. In 2003, Telenor Group acquired Canal+ owner shares, and in 2004, Telenor Group merged the cable TV operator 'Telenor Avidi' into Canal Digital (Dagens Næringsliv 2001). Telenor Broadcast' entertainment and television company Canal Digital is the largest Nordic provider measured both in terms of revenue and number of subscribers (930 000 households).

Canal Digital AS[25] is the parent company of four geographical Subsidiaries; Canal Digital Norway, Canal Digital Sweden, Canal Digital Denmark and Canal Digital Finland. The organization of Canal Digital results in a structure where some functions are common for all four countries. These functions include product development, information systems (IS) and technology, human resources management (HRM), go-to-market and finance. Other functions are left to the individual subsidiaries - sale, local marketing, CRM and customer service divisions, being amongst them (CD1 2015; Simensen 2014 p. 22).

Figure 4.9 illustrates the innovation expenditure of Telenor Broadcast in 2013. Notice that the collection of innovation expenditure data was from Telenor Broadcast as a whole, and not only Canal Digital. The data from Telenor Broadcast consist of a description of the projects,

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[23] Builds and develops digital terrestrial network of television and radio
[24] Provide satellite communication services for broadcasting and data communication.
[25] Hereafter referred to as Canal Digital

enabling a categorisation of technological capabilities, and the subsequent expenditure. However, for some projects it is not obvious as to whether is belongs to Canal Digital, or other subsidiaries of Telenor Broadcast, subsequently the data is presented from Telenor Broadcast as a whole. Nonetheless, the data and subsequent discussion are able to indicate the level of innovation expenditure and technological disciplines in Canal Digital.

Figure 4.9 Innovation expenditure Telenor Broadcast 2013
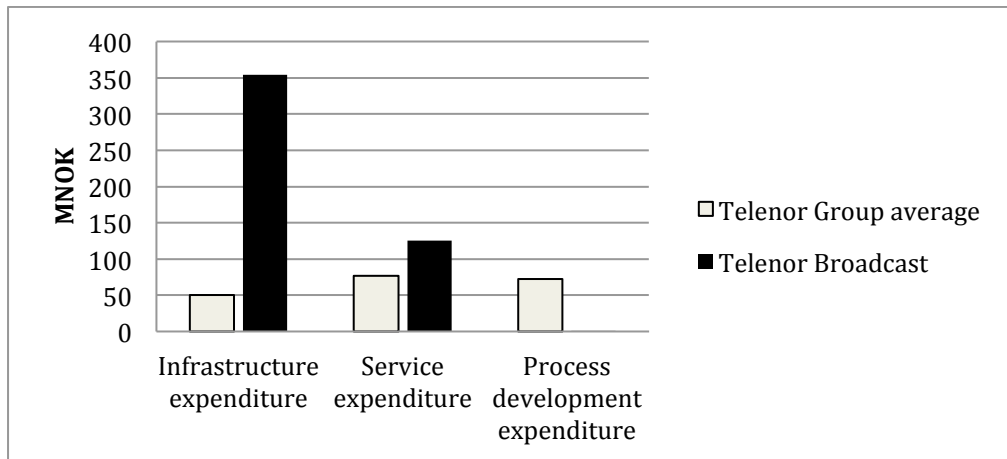
Compared to the average investment pattern in the Telenor Group, Telenor Broadcast is significantly above the average with about 300 MNOK. The majority of infrastructure innovation expenditure in Canal Digital relates to significantly upgrading existing infrastructure such as transmitters, power generators and software, and brand new technology (Hildrum and Hallingsby 2014). In relation to service expenditure, which are also higher than average in the Telenor Group, the investments include projects that are intended to enhance the TV-experience, and creating an eco-system for adding advanced services to the existing broadcast operations. The category also includes product development for broadcasting. The investments are well below average within process development expenditure. Canal Digital is the subsidiary of this study with the highest innovation intensity. Compared to other subsidiaries, the overall breadth of disciplines is higher, despite a lower number of technological disciplines in infrastructure projects.

Innovation in Canal Digital is under pressure. Canal Digital is a broadcast company based on satellite services. Streaming services like HBO and Netflix have challenged the traditional

broadcast market[26], and Canal Digital struggles to keep up with this development, as its distribution and business model is in "traditional broadcasting". On the other hand, Canal Digital considers steaming services to be a supplement, not a substitute to satellite TV. Nonetheless, Canal Digital is in a phase of adapting to these market conditions, by for instance developing its own sort of streaming service. This service will however not compete directly with HBO, Netflix, Viaplay or TV2 Sumo because it will only be offered as a value-added service to excising Canal Digital customers (CD1 2015).

Thus, Canal Digital's focus is on adapting to the technological changes. As a result, Canal Digital has not had sufficient time had the time to focus on other innovation or development opportunities beyond responding to the technological development.

The next sections will first discuss the innovation processes in Canal Digital. Second, it will discuss three organizational attributes; normative integration, local autonomy and local slack resources (Ghoshal and Bartlett 1988), and how these may affect the processes of creation in Canal Digital.

4.7.1 Creation

The qualitative empirical material indicates that Canal Digital is the subsidiary that deviates the least from the standardised Telenor project model. The Telenor project model is applied to all innovation projects in Canal Digital, and the model is considered to be well functioning in the organization.

According to one of the respondents, does Canal Digital not wish to change the Telenor project model. However, Canal Digital does wish to change the way it works with the model (CD2 2015). Until now, Canal Digital has often skipped the first gates in which the focus is on the concept and the idea. Canal Digital is a technology-driven company, with a major part of the employees being engineers. This has led to a process in which ideas have gone straight to development, with less focus on actual customer needs (CD2 2015). The subsidiary has had a technological focus, oriented towards technological developments and the competitor's actions (CD2 2015). However, Canal Digital is now turning towards a phase of designing,

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[26] i.e. satellite dish, cable network and fibre

developing and implementing a more structured innovation process aimed at including customers to a larger extent (CD1 2015: CD2 2015).

Canal Digital is a special subsidiary in several respects. Canal Digital is the parent company of four geographical dispersed Canal Digital's in the Nordic regions, which is not the case with the other two subsidiaries. Furthermore, Canal Digital is a broadcasting company, meaning that it is not part of Telenor Group's core activity. This has several implications for the innovation tasks and the organizational attributes associated with creation, adoption and diffusion.

The creation of innovation in Canal Digital has been discussed in terms of its innovation processes. Canal Digital is the subsidiary that deviated the least from the Telenor project model, compared to the other subsidiaries. Canal Digital has implemented the model as-is, and both the respondents agrees that the model aligns well with the culture of Canal Digital (CD1 2015; CD2 2015). This may indicate that this subsidiary has a high level of normative integration. A high level of normative integration may encourage Canal Digital to be entrepreneurial, as shared values and objectives may facilitate creation of innovation (Ghoshal and Bartlett 1988). This may be related to the fact that Canal Digital is the subsidiary with the highest innovation intensity, of the three cases in this study.

The innovation intensity might also be related to Canal Digital level of local slack resources. The subsidiary's innovation expenditure is significantly above average in Telenor Group, and above the other investigated subsidiaries. Furthermore, the revenues of 2013 are many times higher than Telenor Bulgaria, thus indicating a higher level of local slack resources. However, it may not be valid to compare this subsidiary with Telenor Bulgaria and Telenor Pakistan, due to the centralization of innovation projects for all four Canal Digital units to this subsidiary.

4.7.2. Adoption and diffusion

Canal Digital's limited opportunity of adopting innovations due to its core activity, might explain its high rate of creation. The respondents (CD1 2015; CD2 2015) maintain that the Canal Digital would adopt innovations, if there were any relevant innovations to adopt. Besides a cloud-service platform Canal Digital has adopted to one of its services, there have been few relevant innovations.

Low density of communication and cooperation with other subsidiaries might further explain the low rate of adoption. Lower density communication with other subsidiaries is negatively associated with adoption and diffusion of innovation (Ghoshal and Bartlett 1988). Canal Digital being outside Telenor Group's core activity may again explain the lower rates of communication, compared to the other subsidiaries. However, one of the respondents (CD2 2015) reported, on the contrary of previous beliefs, that after attending an innovation summit with some of the other subsidiaries this spring, it became evident that other subsidiaries do have relevant ideas and innovation for Canal Digital.

Regarding diffusion of innovation there is a high rate of diffusion from Canal Digital to the other four geographical dispersed Canal Digitals. On the other hand, the respondents (CD1 2015; CD2 2015) could not identify innovations that diffused from this subsidiary to Telenor Group or other subsidiaries.

This section has discussed general characteristics of Canal Digital including its market, innovation expenditure and on-going innovation activity, including the three innovation tasks of creation, adoption and diffusion. The innovation tasks have been analysed using the organizational attributes of normative integration, local slack resources, and density of internal communication, which suggestively affect creation, adoption and diffusion (Ghoshal and Bartlett 1988). The next section will discuss Canal Digital's structural position in terms of global integration and local responsiveness, and how this may affect its innovation activities.

4.7.3 Global integration and local responsiveness

The development of a more structured approach to include the customers in the innovation process, orientates Canal Digital towards being locally responsive. Canal Digital wants to shift its focus towards the actual customer needs, by including customers in the early phases of product development. The decision to increasingly include customers is intended to give insight into new product and service ideas, and input into how to alter existing product and services, to better fit the customer needs (CD 2 2015).

Marketing and sales are two decentralized functions in the four Canal Digital units. I asked if the decentralization was because the customers have different needs in the four different markets. Both the respondents claim that the customers in the Nordic region are not that different (CD1 2015; CD2 2015). If one compared the Nordic region to other Telenor markets, one will find major differences between the customers (CD1 2015). According to the same respondent, Canal Digital does not find significant differences related to broadcast when comparing the customers in Norway and Sweden. Both the respondents point towards a common belief that the differences are more profound than they actually are (CD 1 2015; CD 2 2015). This attitude is materialized in resistance in the subsidiaries towards rolling-out products that are developed by Canal Digital centrally, as some employees argue that this will not sufficiently satisfy their customer's needs. The development teams have to make compromises in the development of products and services to satisfy the need of the customer segments in all four countries (CD1 2015) due to challenges within this area.

Though Canal Digital is working towards including the customers in their innovation projects, the process itself is centralized to Canal Digital. Previously the units in Denmark, Sweden and Finland was more autonomous, but with economies of scale and efficiency in mind the units have now adapted an approach of centralization to make the units more alike (CD1 2015; CD2 2015). Other than the centralized product development, this includes information technology (IT), information systems (IS) and structure, and organizations of the units (CD1 2015). The following example may illustrate the need of centralization functions. Canal Digital offers eight different channel-packages in four different countries. Additionally there are various combinations within these packages. Not only does this create a situation where Canal Digital has to build (unnecessary) advanced IS systems; it also makes it challenging to make minor changes within operations that could have been easily altered. Centralizing the IS system therefore enables more efficient operations and changes (CD2 2015).

In the current case, one may discuss global integration in terms of the Canal Digital units' integration towards Canal Digital. All Canal Digital's units are highly globally integrated. However, the focus in Telenor Pakistan and Telenor Bulgaria has been on the level of integration towards Telenor Group. Canal Digital, and subsequently the four units have a low level of global integration towards Telenor Group. Besides functions such as HR and finance, where the subsidiary has to follow specific frameworks and guidelines, there is little evidence

of integration. This may be related the business area Canal Digital is in. Canal Digital operates in broadcast, which is not the core activity of Telenor Group. Part of the reason of a lack of global integration may be the lack of relevant infrastructure, products and services from Telenor Group.

Currently, Canal Digital is developing a service that requires a cloud-service. In this particular project Telenor Group is involved as it has competence and cloud-based platforms already established. Other than that, there is little co-operation, and adoption from Telenor Group (CD 2 2015). One of the respondents (CD2 2015) maintain that if Telenor Group developed a product or service relevant for broadcasting, Canal Digital would certainly consider adopting it. This has yet to happen. The same respondent point out that she misses a higher degree of involvement from Telenor Group, for instance in terms of competencies on customer involvement in innovation processes. This is a competency she believes exists in Telenor Group.

4.7.4 Key findings and implications of managing innovation in Canal Digital

There are several specific characteristics of Canal Digital, which differentiate it from the other two subsidiaries and have implications for the management of innovation in this subsidiary.

Innovation in Canal Digital is characterised by high expenditure in infrastructure, and above average expenditure in services. The services expenditure is mainly related to designing a on-demand streaming service in addressing the competitive pressures from streaming services. As a result, Canal Digital's main focus has been on keeping up with the technological changes, leaving the subsidiary with less time and resources to focus on innovations extending beyond this. Canal Digital owns infrastructure based on traditional television. The respondents for this study do not consider streaming services to be a direct substitute to the offers of Canal Digital, rather a complementary service. On the other side, Canal Digital is experiencing a decrease in their current market share (from 55% in 2007 to 45 % in 2013, Medienorge 2015). This may imply that Canal Digital should focus on value-added services based on their existing technology (CD 1 2015).

Canal Digital is the oldest (established in 1997) and most mature subsidiary of this study. Compared to the other two cases, Canal Digital also has the highest innovation intensity. A great breadth of technology disciplines in innovation projects may imply a lower degree of economy of scale, in terms of using the same technology to create several innovations (The Economist 2008). On the other side breadth of technological discipline may enable economies of scope. Economies of scope may become a result of centralizing the creation processes for the four Nordic regions, and adhere to one standardized processes. Economies of scope is enabled in Canal Digital because the average total cost of production decreases by way of increasing the number of different products or services produced (The Economist 2008).

In terms of innovation processes Canal Digital has implemented the Telenor project model as-is. The model is considered to be functioning well in the organisation. Aside from a tendency of skipping the first gate related to conceptualization of the idea, there is little deviation from the original model. There has been a tendency of focusing less on the actual customer needs and wants in the innovation processes of Canal Digital. Consequently, Canal Digital has a moderate degree of local responsiveness. The subsidiary is however working on processes to include the customers to a larger extent in the product development, which may lead to higher levels of local responsiveness.

Canal Digital is a special case as this subsidiary is not within Telenor Groups core activity. As a result this subsidiary has a low degree of global integration. This may be explained by the fact that Telenor Group has little to offer Canal Digital, both in terms of competency, product, services and other support systems.

The innovation activity in Canal Digital is centralized for all four Nordic units. This implies that it may become more challenging to satisfy the local user needs in all four markets. One respondent pointed out that the four units of Canal Digital (Norway, Sweden, Denmark and Finland) usually have input to the innovation processes, resulting in compromises to reach consensus of an idea. The result might be an innovation that does not fully satisfy the need of four different user groups. The risk of not satisfying local customer needs may also be intensified by the tendency of not thoroughly addressing the actual customer needs in the conceptualization phase of the Telenor project model. This is related to Canal Digital comparatively lower levels of local responsiveness. Canal Digital has been a technology-driven organization, in which customer needs have not been the main focus in innovation

projects (CD2 2015). If a technology-focus drive innovation, as opposed to satisfying actual customer needs, innovation may not bring the desired effects to Canal Digital (CD1 2015).

Canal Digital's low level of global integration may be a result of being outside the core activity of Telenor Group. This may imply that Canal Digital is may miss out on opportunities of economies of scale associated with global integration (Marin and Bell 2010). However, the possibility of economies of scope is as noted, enabled in Canal Digital due to the centralization of innovation processes.

Canal Digital being outside of Telenor Group's core activity may imply that this subsidiary to larger extent is dependent on creating innovation at the local level, as the possibilities of adoption are more limited compared to the other two subsidiaries. The low density of communication and cooperation with other subsidiaries further limits this opportunity. However, the findings may indicate that Canal Digital is more isolated than is necessary. This became apparent to one of the respondents during an innovation summit. The summit revealed that there are in fact relevant innovations, such as a co-creation[27] tool that to a larger extent include customers in the innovation processes. This processes may be relevant for Canal Digital to adopt.

The implications of these findings are that Canal Digital should try to increase internal communication and collaboration with other subsidiaries, as this may increase adoption and diffusion of innovations (Ghoshal and Bartlett 1988). As noted in the analysis of the other two subsidiaries, increasing adoption may be cost-efficient, both because the subsidiary do not have to bear the development cost, and because one reduce the risk and cost of 'double work'. On the other side, Canal Digital does have cost-efficiency in centralizing functions across the Nordic region, such as innovation. This may however imply not exploiting the potential for innovation that may be present in the four Nordic Canal Digitals.

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[27] Co-creation is a management initiative that centers around involving the community outside a corporation (customers, suppliers, vendors ect) in the ideation phase of a new product or service development. The participants are through a series of steps invited to contribute, evaluate and re-define ideas and concepts, in order to jointly create a mutual valued outcome (Prahalad and Ramaswamy 2004)

Lastly, low rates of internal communication and collaboration may reduce the possibility of utilizing valuable competency and knowledge that some of the respondents thinks exists outside this subsidiary (CD1 2015; CD2 2015).

4.8 Comparing across – heterogeneity and implications

By comparing the three subsidiaries of this study across one may observer that there are noteworthy variations in the cases. Size in terms of revenue and local slack resources, level of maturity, the competitive situation and core activity are some of the characteristics that differentiate the subsidiaries, and create different conditions for innovation. However, these characteristics also make it challenging to compare across. Nonetheless, the next section will attempt to compare the findings in the subsidiaries and discuss what this may mean and how the findings resonate with the theoretical framework. This will be followed by a section about the implication of the findings may have for Telenor Group as a whole.

According to Ghoshal and Bartlett (1988) the innovative activity in MNC subsidiaries is characterised by creation, adoption and diffusion of creation. The organizational attributes of density of internal communication, normative integration, local autonomy and local slack resources are associated with these three tasks. Different degrees of these attributes create variations of the subsidiaries performance on the three innovation tasks (Ghoshal and Bartlett 1988).

Comparatively, Telenor Pakistan has the second highest level of local creation of innovation, but the lowest the lowest breadth of technological disciplines in its creation. Further, Telenor Pakistan has a lower level of adoption compared to Telenor Bulgaria, but the highest level of diffusion (though the degree of diffusion is not high). Telenor Bulgaria has a high level of creation, however a significant part of these projects are initiated and managed centrally by Telenor Group. Consequently, there is a low degree of local creation of innovation. Telenor Bulgaria has compared to Telenor Pakistan a greater breadth of technological disciplines, both in relation to infrastructure and services. However, the breadth may be explained by the transformation phase of this subsidiary, in which there is a lot of activity in several business areas to transform this subsidiary into a Telenor Group company. Furthermore, this subsidiary has the highest level of adoption of innovation from Telenor Group and other subsidiaries. Due to low local creation, there is also a low level of diffusion in this subsidiary.

Canal Digital has comparatively the highest level of creation of innovation, and also the greatest breadth of technological disciplines in innovation projects. Further, Canal Digital has the lowest level of adoption and diffusion of innovation.

The breadth of technological disciplines may say something about a subsidiary's area of expertise. The subsidiaries have its own set of knowledge embedded in the unit. Furthermore, subsidiaries tends to assimilate knowledge from the geographic location it is operating in, consequently subsidiaries evolve its technological knowledge over time (Marin and Bell 2005; Vives, Asakawa and Svejonova 2010). Canal Digital is as noted the subsidiary with the greatest breadth of projects. This subsidiary is also the most mature, and may therefore had better time to accumulate and evolve its knowledge and technological capabilities (Marin and Bell 2005). However, it should also be considered that Canal Digital is outside Telenor Groups core activity, meaning that it less relevant for Canal Digital to adopt innovations of other subsidiaries. This may have created a greater pressure to develop technological capabilities compared to the other two subsidiaries.

One explanatory factor of the varying breadth of innovative activity may therefore be the assimilated knowledge embedded in the subsidiaries. Enabling the subsidiaries to innovative in technological disciplines based on its assimilated knowledge form the locations its operating in (local responsiveness) leads to a high quality of innovation (Marin and Bell 2005; Vives, Asakawa and Svejonova 2010). Furthermore, such an approach implies that Telenor Group can exploit economies of scope related to the learning and knowledge embedded in geographical dispersed operations (Ghoshal and Bartlett 1988).

One of the attributes that affect the three innovations tasks is the degree of local slack resources (Ghoshal and Bartlett 1988). In Telenor Group the subsidiaries controls a large share of the financial resources themselves (TP1 2014). Consequently, there is a link between total revenues and the degree of local slack resources, which may create variations between the three subsidiaries. Canal Digital is the subsidiary with the highest revenue (6735 MNOK in 2013) and it is also the subsidiary with the highest level of creation. Thus, Canal Digital is the subsidiary with the highest innovation intensity as indicated in chapter 4.3.1. This is followed by Telenor Pakistan with the second highest revenue (5406 MNOK in 2013), Telenor Pakistan has the second highest level of creation. Lastly, Telenor Bulgaria has the lowest revenue (1151 MNOK). Though there is a lot of creation in Telenor Bulgaria, it is

centrally driven and partly funded by Telenor Group following the acquisition. Subsequently, there is a low level of local creation, which may be in part explained by a comparatively lower level of local slack resources. The may imply that if Telenor Group wish to increase the level of local innovation, Telenor Group has to ensure that there are adequate levels of local slack resources in the subsidiaries.

By comparing the subsidiaries across one may further observe differences in the processes of creation. As noted in chapter 4.4 Telenor Group has imposed standardised project model, in an attempt to gain benefits of global integration in the area of innovation management. The subsidiaries are instructed to apply the model to all innovation projects. The subsidiaries have a certain degree of autonomy in adapting the project model to local subsidiary needs. Local autonomy is one of the organizational attributes identified by Ghoshal and Bartlett (1988) that affect creation. This study has illustrated that local autonomy of the subsidiaries has resulted in different innovation processes across all three subsidiaries, despite the process originating from the same model. The question then becomes whether Telenor Group has attained its goal of global integration in the area of innovation management.

Respondents from different subsidiaries (TP2 2015; CD1 2015; TB2 2015) suggest that seemingly the subsidiaries have gained a more similar approach to innovation, compared to the situation before the project model was implemented. A more similar way of working with innovation makes it easier to cooperate across the subsidiaries (CD1 2015). Furthermore, a standardised project model might make it easier to adopt and diffuse innovations. Given that a subsidiary has followed the project model protocol, another subsidiary adopting the innovation may skip the steps associated with development, and commence straight to launch. There is no need to re-visit the development step, as they are considered to be assured of quality, if the development has followed the standardized model (TP1 2014). Therefore, it might be easier to diffuse innovations developed with the use of the project model. These finding may indicate that Telenor Group may gain benefits such as economies of scale, associated with global integration (Birnik 2007).

Adoption and diffusion innovation is seemingly more cost-efficient, as the unit price of an innovation will decrease, if other subsidiaries adopts it. The unit price may decrease for two reasons. First, if an external vendor is developing (parts of) the innovation the price is likely to decrease, as the possibility of utilizing scale in negotiations arises (TP1 2014). Second, the

unit price will decrease, because it is common practice in Telenor Group that a subsidiary will pay for adopting innovations developed by central Group subsidiaries (such as Telenor Digital) or other subsidiaries. Consequently, it is more cost-efficient to pay a (lower) price to adopt an innovation, compared to the cost of developing the innovation.

The previous section, amongst other things, discussed that a standardised project model has been an attempt from Telenor Group to create global integration in the area of innovation management. If one further compares the subsidiaries across, different patterns of global integration and local responsiveness emerge.

Specific characteristics of the subsidiaries, such as the level of maturity and the market situation may affect its level of global integration and local responsiveness. The three subsidiaries of this study all have different levels of maturity. The subsidiaries maturity level implies that the subsidiaries need different kinds of support and enablers from Telenor Group, at different points of time (TP3 2015). Consequently, there may be a link between the level of maturity and the level of global integration of the subsidiaries, meaning that a more immature subsidiary may be more integrated towards Telenor Group, than the more mature subsidiaries. The may be illustrated by the case of Telenor Bulgaria.

In the case of Telenor Bulgaria, being an immature subsidiary has meant a high level of integration into Telenor Group (TB2 2015). There is a high involvement from Telenor Group in the on-going processes of transforming the subsidiary into a Telenor Group company. A large share of the on-going innovation projects is therefore managed and financed by Telenor Group. Even though Telenor Bulgaria is starting to enter a phase of more locally driven initiatives and innovation projects, the subsidiary is still monitored and controlled by the Telenor Group (TB2 2015). As a result Telenor Bulgaria is the most immature subsidiary in this study, and also the subsidiary that has the highest level of global integration.

On the other side, Canal Digital is the oldest and most mature subsidiary. This subsidiary also has the lowest level of global integration in this study. This may however be explained by the fact that Canal Digital is outside the core activity of the Telenor Group. This means that is less relevant for Canal Digital to integrate, in areas not related to overarching corporate functions such as finance or HRM (CD2 2015).

Lastly, Telenor Pakistan falls somewhere in-between the two other subsidiaries. Telenor Pakistan has evolved form being a greenfield investment to a entering a more mature market and phase. This subsidiary has a somewhat higher level of global integration than Canal Digital, extending beyond integration overarching corporate functions, to for instance global backend services such as the Telenor application store. However, its level of global integration is low, compared to the observed level in Telenor Bulgaria.

The other side of the continuum is local responsiveness (Marin and Bell 2005). The similarities of the subsidiaries is that they all experience competitive pressures in their respective markets, but in different ways. In addition, consumers, national infrastructure and host country government regulations differ. The extent to which a subsidiary respond to these differences determines its degree of local responsiveness (Harzing 2000). Telenor Group has built infrastructure in all three countries in which the subsidiaries of this study originate. Further, Telenor Group comply to local government regulations for instance through licence and spectrum agreements (Telenor Group 2013). Therefore, local responsiveness is analyzed and discussed in terms of satisfying local customer needs.

Telenor Pakistan has comparatively the highest level of local responsiveness. Telenor Pakistan has a high degree of local creation of innovation based on intelligence of customer needs, as opposed to adopting innovations from Telenor Group and other subsidiaries. In cases of adopted innovations, they are to a high degree adapted to suit the local needs of Pakistani customers.

Both Telenor Bulgaria and Canal Digital have lower levels of local responsiveness, but for different reasons. Telenor Bulgaria is less locally responsive at the moment due to the transformation phase and subsequent involvement of Telenor Group. The focus in this subsidiary is on implementing basic corporate infrastructure. Canal Digital on the other hand, is according to two respondents (CD1 2015; CD2 2015) driven by a technology focus, which often has implied less focus on actual customer needs. Furthermore, Canal Digital is not differentiating between the customers of the Nordic countries, but rather focusing on economies of scale by standardising centrally created innovations (CD1 2015).

To sum up there are varying degrees of global integration and local responsiveness in the three subsidiaries. These findings are in line with Marin and Bell's (2005) study, which found that subsidiaries within a MNC differed in degree of global integration and local responsiveness. Furthermore, Marin and Bell (2005) suggest that subsidiaries identified in different structural positions significantly differ in terms of its innovative activity. This suggestion is in line with the findings of heterogeneity of innovative activity in Telenor Group subsidiaries.

The findings of this study are also in line with the characteristics of the telecommunication industry as noted in the theoretical chapter, in which there are pressures of being both globally integrated and locally responsive (Birnik 2007). The observed variations in degree of global integration and local responsiveness between the subsidiaries indicates that the actual strategy implemented at subsidiary level is, as Meyer and Su (2011) suggest, co-determined at the local level. The co-determination of strategy may be illustrated by the use of the Telenor project model. Telenor Group has, as noted, attempted to implement a standardised project model aiming for global integration of the management of innovation. The result of local autonomy at the subsidiary level is that the use of the Telenor project model is co-determined, and thus creating variation in the subsidiaries innovation processes.

Marin and Bell's (2005) study found that a high level of global integration and a high level of local responsiveness led to a higher degree of local innovative activity in a subsidiary. Of the three subsidiaries in this case study, Telenor Pakistan appears as the most balanced units in relation to global integration and local responsiveness. Telenor Pakistan have a range of innovation projects i.e. both relating to global integration and the global backend platform, and related to being locally responsive to their market need. In this case study Telenor Pakistan may in relative terms be the only subsidiary that one can consider having a 'high-high' level of both the structural positions. Despite Telenor Pakistan having a high level of global integration and local responsiveness, do the innovation expenditure from 2013 not reflect a higher level of local innovation activity, compared to the other subsidiaries. However, it has been suggested that Telenor Pakistan is increasing starting to show signs of higher local innovation activity (TP1 2015: TP3 2015, Simensen 2014). This may imply that Telenor Pakistan and Telenor Group, should focus on maintaining the high level of global integration and high level of local responsiveness, as it may over time increase the level of

local innovation activity in Telenor Pakistan (Marin and Bell 2005). The other two subsidiaries are not considered to have a 'high-high' level of global integration and local responsiveness, for reasons outlined in the previous sections.

Indicating that a subsidiary relatively speaking has a 'high-high' level of both structural positions contradicts recent research (Peng 2009; Verbeke 2009) suggesting that a corporation will have to make a choice between being globally integrated or locally responsive. This raises the question of whether the positions of global integration and local responsiveness are mutually exclusive?

Marin and Bell's (2010) study observed that some subsidiaries had a high degree of global integration *and* local responsiveness, subsequently forming a "dually integrated" category. The empirical findings of this thesis suggest that Telenor Pakistan is the only subsidiary that demonstrates major activity in both structural positions, thus bearing elements of this "dually integrated" category. The existence of a "dually integrated" category is possible in Telenor Group because on one hand Telenor Group to a certain degree enforces processes and innovations for instance relate to HR, procurement, and IT infrastructure.

On the other hand, subsidiaries have the flexibility and autonomy to adapt products, services and processes to its local subsidiary or market needs. That being products or services they have developed themselves or products or services offered by the Group (for example Wimp). Thus, on a functional level in the corporation there is room for global integration, and this is where one may observe the highest occurrence of this in Telenor Group. Whereas local responsiveness is more apparent when it comes down to the specific product and services offerings of the subsidiaries.

The empirical findings indicate that all three subsidiaries have a mixture of both structural positions. All three subsidiary and markets are in different stages of development, but have in their own unique manner a combination of the structural position, indicating that a company must not necessarily make a choice between the two. The findings thus suggest that it is possible for Telenor Group subsidiaries to bear elements of both structural positions. This is in contrast to recent work of Peng 2009 and Verbeke 2009 that suggests that a high degree of global integration *and* local responsiveness is somewhat idealistic and that in reality most companies will have to make a choice between the two (Meyer and Su 2011).

4.9 Implications of the key findings for Telenor Group

The empirical findings and subsequent discussion suggests that there to a large extent is variation in the innovation processes of Telenor Group subsidiaries. This thesis has emphasised that Telenor Pakistan, Telenor Bulgaria and Canal Digital exhibits heterogeneity in the creation, adoption and diffusion of innovation, and the degree of global integration and local responsiveness. This thesis has further discussed implications of the key findings for managing innovation at subsidiary level. The next section will address the third research question: *What are the implications of inter-subsidiary variations with regards to being an innovative MNC*? It should be noted that this study has only included three of Telenor Group's seventeen R&D performance units. This means that the implications has to be understood in relation to the limited sample of this study. Thus, this study is not be able to draw conclusions representative for all subsidiaries, and therefore not for Telenor Group.

The discussion about being an innovative MNC will also include consideration of cost-efficiency. Cost-efficiency is sometimes considered to be the opposite dimension of innovation (Marchal 2010). Though this view may be reflected by some of the strategies that will be outlined in the next section, the discussion will also indicate that cost-efficiency and high level of innovation may be combined in one (transnational) strategy. Furthermore, as the next sections will illustrate, cost-efficiency and innovation are not necessarily competing goals. Findings new ways for being cost-efficient is also innovation, and considered one of the reasons as to why firms innovate (OECD 2005).

The implications will be discussed in relation the framework of creation, adoption and diffusion of innovation, in terms of difficulties in establishing a common strategic direction, local autonomy and disturbing of the flow between subsidiaries. Furthermore, the third research question will be discussed in the framework of global integration/local responsiveness including issues of economies of scale, collaboration across the subsidiaries, a potential for more innovation with local responsiveness and Telenor Group as an enabler of innovation.

Difficulties in establishing a common strategic direction
Meyer and Su (2011) suggest that the strategy a subsidiary pursue is co-determined at the local level, and thus not only a result of decision making at the headquarter level. The

empirical findings are in line with this suggestion, meaning that the strategy at the subsidiary level is likely to vary. As the previous section discussed, the strategies of the three subsidiaries vary for a number of reasons. As noted Telenor Pakistan has a mixture of global integration and local responsiveness, thus bearing similarities to a transnational strategy. Telenor Bulgaria is somewhat premature to discuss, but is more inclined towards a global strategy at the moment, due to the transformation phase. Moreover, Canal Digital is less global integrated, as the subsidiary is not part of Telenor Groups core activity. Infrastructure, systems and innovations from Telenor Group and other subsidiaries is less applicable for this Canal Digital, therefore this subsidiary is more locally responsive and to a larger extent create its own innovation. This makes Canal Digital bear similarities of the multinational strategy. The strategy distribution of the subsidiaries is illustrated in Figure 5.1 (Bartlett and Ghoshal 1987).

Figure 4.10 Strategy distribution of the subsidiaries.
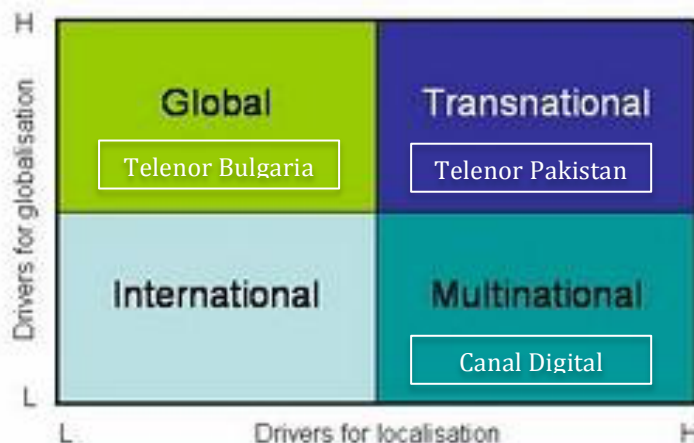
The heterogeneous distribution in terms of strategies may illustrate that it might be difficult to establish a common strategic direction for the subsidiaries of Telenor Group (Shutte 1997). The lack of a common strategic direction of the subsidiaries may make it harder to enforce control mechanisms positively associated with a higher level of innovation at subsidiary level (Ghoshal and Bartlett 1988). Further, a higher degree of local autonomy and local responsiveness in terms of every subsidiary having a different approach to innovation, may create challenges for the Group in terms of setting targets, controlling and measure innovation within the subsidiaries (TB1 2015).

Thus, the difficulties of establishing a common strategic direction may imply that it will be challenging for Telenor Group to be cost efficient and highly innovative. The difficulties of

setting a common strategic direction may also be explained by the autonomy of the subsidiaries, which will be further discussed in the next section.

Local autonomy

This study has indicated that all three subsidiaries exercises its local autonomy in terms of choosing what innovations it wants or have a need for adopting. This implies that local autonomy may impede adoption of innovation in a MNC (Ghoshal and Bartlett 1988). The process of adoption is critical to a MNCs' ability to pursue a global integrated strategy (Ghoshal and Bartlett 1988). Thus the implications of strong local autonomy of the subsidiaries is that it might prove difficult for Telenor Group to become a global integrated MNC. A global integration strategy is at the core of maximizing economies of scale and economies of scope (Harzing 2000), therefore local autonomy may decrease Telenor Group's potential of cost-efficiency.

Moreover, the study of Ghoshal and Bartlett (1988) was inclusive as to the affect local autonomy has on creation and diffusion of innovation. Therefore, if a subsidiary chooses not to adopt innovations, it does not necessarily mean that it will create and diffuse more innovations in Telenor Group.

Disturbing the flow of product, services, information and people

Variations in the subsidiaries strategic direction may disturb the flow between the subsidiaries of products, services, information and people associated with the transnational strategy (Harzing 2000). This thesis suggests that Telenor Pakistan's characteristics bear similarities to the transnational strategy. If the subsidiaries have different patterns of flow associated with different structural positions, as discussed in chapter 1.4, it may be come challenging to cooperate across the subsidiaries. This is also related to the level of global integration, which will be further discussed later in this section.

One might argue that Telenor Bulgaria is operating with a global structure. Consequently, it will be less likely to adopt innovations created by other subsidiaries, and diffuse its innovation to other subsidiaries, in either case it would have to be mediated by Telenor Group (Ghoshal and Bartlett 1989;1992; Harzing 2000). The mediation from Telenor Group current characterised the adoption of innovation in Telenor Bulgaria. Operating a

multinational structure, as it may be argued that Canal Digital is, increase the likelihood of less overall activity in all the three innovations tasks of creation, adoption and diffusion (Harzing 2000). As the empirical material has revealed, Canal Digital has low rates of adoption and diffusion of innovation due to their core activity. In terms of creation however, Canal Digital has a high innovation intensity, a finding that somewhat contradicts Harzing (2000) suggestion. If a subsidiary has a transnational structure, which Telenor Pakistan bear similarities to, it is likely that the structure would enhance the flow. Thus, a transnational structure may increase diffusion and adoption, at least amongst the subsidiaries adhering to the same structural position (Harzing 2000), which the example of financial services has illustrated.

The implication of the different flows means that it is less likely that a subsidiary operating a different strategy than the transnational will adopt and diffuse innovations on its own initiative in Telenor Group. Thus, different strategies at subsidiary level disturb the flow of innovation, information and people, and may in this manner have a negative impact on all three innovation tasks (Ghoshal and Bartlett 1988).

There are also implications related to global integration and local responsiveness in the subsidiaries. This includes economies of scale, collaboration across the subsidiaries, the potential of more innovation with local responsiveness and Telenor Group as an enabler of innovation.

Economies of scale

Economies of scale may be seen in relation to the reason why firms innovate. Firms innovative to improve performance. Reduced costs for instance through economies of scale is one way of improving performance (OECD 2005). Global integrated functions in Telenor Group such as IT infrastructure, finance, HR management and sourcing (meaning negotiations with vendors), enables economies of scale. For instance regarding sourcing Telenor Group may negotiate a lower unit price of product or services for the subsidiaries, if Telenor Group leverages its size. This may be illustrated by the example of Wimp in the Asian subsidiaries. The unit price of Wimp exponentially decreased with the number of subsidiaries that purchased the service (TP3 2015).

Collaboration across the units

Global integration may enable a more similar approach of working with innovation in the different subsidiaries. A more similar approach to innovation including a standardized innovation process, may ease and therefore enable collaboration and information sharing across the subsidiaries (CD1 2015; CD2 2015). Due to the varying understanding of innovation and heterogeneous innovation practises, the subsidiaries is by some respondents perceived as 'silos', with little interaction and collaboration between the subsidiaries. It became apparent on an innovation workshop Canal Digital participated in, that there is a range of products, services and ideas that has been developed by various subsidiary, that might be scaled to other subsidiaries. This is also related to the flow of innovation, information and people discussed earlier in this section. Global integration might ease information sharing and collaboration across subsidiaries, as the innovation processes and the understanding of innovation becomes more similar (CD1 2015). This may further lead to more innovation, as concepts, products or services may be easier scaled (diffused) to other subsidiaries.

The potential of more innovation with local responsiveness

A higher degree of local responsiveness may lead to more creation of innovation (Marin and Bell 2010) and a higher quality of innovation (Vives, Asakawa and Svejonova 2010), because it enables the subsidiary to deliver on user feedback. There is feedback from the local user, and that feedback will differ in the different subsidiaries (TP3 2015). If a subsidiary knows the local market needs, and have the autonomy and local slack resources to be locally responsive, it may lead the subsidiary to act faster on emerging or changing needs. This may result in a higher output of innovations (Ghoshal and Bartlett 1988), and a decreased time to market for innovations, compared to the timeline if Telenor Group were to control the projects (TP3 2015). Thus, if a subsidiary has autonomy and resources, it may lead to more innovation in the local subsidiaries (Ghoshal and Bartlett 1988), and provide grounds for better economical results on Group level (TB1 2015).

If a higher degree of local responsiveness may lead to more innovation, the opposite – global integration may be argued in some instances to stifle innovation (TP3 2015). This may be illustrated by the following example; Telenor Digital have in its global backend services made a demanding login process to enable the usage of a global platform, where all the

business services are situated. However, the customers of Telenor Pakistan "*do not wish to spend time on login processes*" (TP3 2015). Telenor Pakistan has explained the situation to the global backend services, but it is having challenges or do not wish to customize the login, across all subsidiaries. The assistant manager of new strategy and new business development in Telenor Pakistan claim that: "*it is stifling the action of that innovation product. If you don't customize it will stifle innovation at the subsidiary level.*" Consequently, implementing standardized services may in some situations be argued to stifle innovation.

Telenor Group as an enabler of innovation

Marin and Bell (2005) found that a high degree of global integration is not on its own associated with high levels of innovative activity. It is only when a high degree of global integration is grouped with a high degree of local responsiveness that one may observe higher levels of innovative activity. This may imply that innovation should not be centrally driven and fully standardized by Telenor Group. Telenor Group may drive innovation through enablers such as the global backend services[28], because as the subsidiaries mature, all the subsidiaries will eventually need the same types of enabler. However, there are varying requirements of the subsidiaries in different point in time, therefore it cannot be centrally driven. Thus, one standardized innovation cannot necessarily be simultaneously launched across all subsidiaries (TP3 2015). The respondent further argues that innovation processes cannot be centrally driven, because "*innovation is driven by people, not technology*". The major element input is people, and every subsidiary has a different way of working because of cultural differences. For instance "*dTac (Telenor Thailand) is laidback, but Telenor Pakistan is always on the run*" (TP3 2015). Due to the cultural differences of the employees that drive innovation, Telenor Group should not standardize innovation across all subsidiaries (TP3 2015).

In terms of being an innovative MNC, the findings may imply that Telenor Group should fully standardise innovation across the subsidiaries, but rather be an enabler of innovation, for instance through the global backend services, as we have seen examples of in this master thesis.

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[28] The global backend service may work as an enabler of innovation through providing necessary backend infrastructure and processes. One example is the applications store for Telenor Group. This may works as an enabler of innovation; for instance Telenor Pakistan may develop an application (i.e. an innovation) and go strait to launch the application in its local and/or the global market, because global backend services has provided the required infrastructure in terms of an application store (TP3 2015)

If the Telenor Group desires higher levels of innovation activity, one implication might be that they cannot fully standardise innovation processes across the subsidiaries, but rather be an enabler of innovation for instance through the global backend services, as we have seen examples of in this master thesis.

5.0   Conclusion

The purpose of this thesis has been to examine heterogeneity of innovative activity in geographical dispersed subsidiaries in Telenor Group, and the implications for innovation management. This thesis has conducted a case study of Telenor Group subsidiaries in Bulgaria, Pakistan and Canal Digital. A quantitative analysis of innovation expenditure has examined the characteristics of innovation and innovation intensity of the subsidiaries. The quantitative analysis formed the background of a qualitative study involving semi-structured interviews. The latter study explored creation, adoption and diffusion of innovation, and the degree of global integration and local responsiveness in the subsidiaries, and subsequently the implications for innovation management. The mixed method case study has provided this thesis with several finings that the next section will present.

What characterises innovation in a MNC?
Innovation at the corporate level in Telenor Group is characterised by investments in capital-intensive telecommunications infrastructure. Generally, the innovative activity in Telenor Group as a whole is characterized by having highest innovation expenditure in infrastructure, followed by services, and the lowest expenditure in process development. This study has further found that innovation in Telenor Group is characterised by inter-subsidiary heterogeneity of innovative activity. The heterogeneity is materialized in different levels of innovation intensity, i.e. the subsidiaries of this study vary with regard to innovation expenditure and the breadth of technological disciplines in its projects.

This study has found, in line with Ghoshal and Bartlett (1988) that varying degrees of the organizational attributes; density of internal communication, normative integration, local autonomy and local slack resources, create variations in the subsidiaries performance in the three innovation tasks of creation, adoption and diffusion.

Creation of innovation has been analysed in terms of the innovation processes at subsidiary level, and the starting point of analysing the subsidiaries innovation processes was the Telenor project model presented in chapter 4.4. The Telenor project model may be seen as a tool of normative integration by creating shared goals and strategies throughout the Telenor Group. Normative integration is positively associated with higher level of creation of innovation in a MNC (Ghoshal and Bartlett 1988). However, the subsidiaries have autonomy to adapt the project model to the subsidiaries local needs, the standardised project model may

therefore not have the integrative effect. The findings indicate that there is heterogeneity between the three subsidiaries with regards to innovation processes. The analysis illustrated that only one of the subsidiaries (Canal Digital) has implemented the model as-is. In relation to innovation processes it might therefore be argued that local autonomy of the subsidiaries impede normative integration in the area of managing innovation projects (Ghoshal and Bartlett 1988).

Furthermore, the characteristics of innovation in Telenor Group in several ways resonate with how innovation is carried out elsewhere. Some of the empirical findings correspond with the theoretical framework of innovation, presented in chapter 1.1. In line with the research of Freeman (1996), Lundvall (1992), Nelson (1993), and Kline and Rosenberg (1986) is innovation in Telenor not a linear process. As the empirical discussion has illustrated, the innovation processes is dynamic and characterised by interacting and feedback loops between the different departments (and employees), as well as between Telenor Group and the local subsidiaries. Though the 'Telenor project model', may be perceived as linear, it is not. Most innovation processes in Telenor Group will be less structured and linear than what appears from the model (TP1 2014). Further, in line with the innovation framework, basic research is not necessarily the starting point of an innovation process. Basic research in Telenor will in some instances play a central role in an innovation process, i.e. research related to new technology. Whereas basic research may have little or no role in other innovation processes, for instance introducing branchless banking in Telenor Pakistan. Kline and Rosenberg (1986) suggests that there are multiple inputs to an innovation processes. The findings of this thesis is in line with this principle, as illustrated by figure 4.7 – aside from basic and applied research, input factors in Telenor Group include employees, customers, external vendors, competitors and market research. Thus, there is a range of potential input factors to an innovation processes, and basic research is not necessarily amongst them.

How and why does innovative activities vary across subsidiaries within the same MNC?
The how part of the research question is partly answered by the previous section. The subsidiaries vary with regards to innovation intensity and in the innovation task of creation (Ghoshal and Bartlett 1988), through their innovation processes. The reason as to *why* innovative activity varies may be explained in the theoretical framework of creation, adoption

and diffusion and subsequent affect of the organizational attributes (Ghoshal and Bartlett 1988).

The variation in innovation processes has been explained by a combination of normative integration (Telenor project model) and local autonomy of the subsidiaries in adapting the model to local needs. The findings further indicate varying degrees of local slack resources and variation of how the resources are distributed, resulting in different intensity in the task of creation. The variations imply that Telenor Group's goal of standardising operation models across the subsidiaries is not entirely accomplished, in relation to the three subsidiaries of this study. It should however be noted that the implementation of the Telenor project model has ensured a more similar approach to managing innovation projects in the three subsidiaries, than what was previously the case. This has for instance led to more communication and cooperation across the Asian subsidiaries, and further led to higher rate of adoption and diffusion of innovation between these subsidiaries (Ghoshal and Bartlett 1988).

Regarding adoption and diffusion, this thesis found that local autonomy might impede adoption of innovation (Ghoshal and Bartlett 1988), as illustrated by the Wimp example in the Asian subsidiaries. Lastly, diffusion of innovation is found to vary due to differences in the density of internal communications between the units, and because of varying requirements of the operating environment of the subsidiaries, making some innovation more relevant to diffuse than others. Lower levels of adoption and diffusion of (relevant) innovations may imply lower levels of cost-efficiency in the subsidiary, and lower levels of economies of scale for Telenor Group as a whole (Ghoshal and Bartlett 1988).

In line with the study of Marin and Bell (2005) this thesis has found that subsidiaries vary with regards to the structural positions of global integration and local responsiveness. This variation may be used as one explanation of the differences in subsidiaries innovative activity. Furthermore, Telenor Pakistan is the only subsidiary that may be considered 'dually integrated' i.e. having a high degree of global integration *and* local responsiveness. The findings in Telenor Pakistan are in line with the characteristics of the telecommunication industry as noted in the theoretical chapter, in which there are pressure of both being globally integrated and locally responsive (Birnik 2007). Telenor Pakistan has a range of innovation projects both relating to global integration and the global backend platform, and related to being locally responsive in its market. A high degree of global integration *and* local

responsiveness in a subsidiary is associated with higher levels of innovative activity at the local subsidiary level (Marin and Bell 2005). Despite Telenor Pakistan having a high level of global integration and local responsiveness, do the innovation expenditure from 2013 not reflect a higher level of local innovation activity, compared to the other subsidiaries. It has been suggested that Telenor Pakistan is increasing starting to show signs of higher local innovation activity. This may imply that both Telenor Pakistan and Telenor Group should focus on maintaining the high level of global integration and high level of local responsiveness, as it may over time increase the level of local innovation activity in Telenor Pakistan (Marin and Bell 2005).

The findings indicate that all three subsidiaries have a combination of both the structural positions, indicating that the two structural positions are not mutually exclusive as researchers such as Peng (2009) and Verbeke (2009) claims. However, the 'low-high' combination of global integration and local responsiveness differs in all three subsidiaries. The observed variations in degree of global integration and local responsiveness between the subsidiaries indicates that the actual strategy implemented at subsidiary level is, as Meyer and Su (2011) suggest, co-determined at the local level, thus creating variation in the subsidiaries innovation activity. Local autonomy of the subsidiaries makes global integration/local responsiveness to a certain degree co-determined, because the subsidiaries have to autonomy to a decide whether they want to adopt innovations Telenor Group have created, aimed at increasing the degree of global integration.

What are the implications of inter-subsidiary variations with regards to being an innovative MNC?
As noted, the structural positions of the subsidiaries are co-determined between the corporate and the local level. Consequently, there is variation in the actual strategy implemented in each subsidiary (Meyer and Su 2011). The variations in implemented strategy may imply that finding and implementing a common strategic direction for the whole Telenor Group becomes difficult (Schutte 1997). The difficulties of implementing a common strategic direction may make it challenging to enforce the control mechanisms associated with higher levels of innovative activity in the subsidiaries (Ghoshal and Bartlett 1988). It may further make it challenging to set targets and goal, and thus measure the performance of the subsidiaries (TP1 2015). Additionally, the employment of different strategies by the

subsidiaries disturbs the free flow of products, services, information and people associated with the transnational strategy, which it is suggested that Telenor Pakistan employs at the moment. Disturbing this flow may have a negative impact on the creation, adoption and diffusion of innovation in Telenor Group (Harzing 2000). By taking all these considerations into account, it may become challenging for Telenor Group to obtain the desired level of innovation if the subsidiaries do not adhere to the same strategy.

Regarding varying levels of global integration and local responsiveness there are several implications. A higher degree of local responsiveness may lead to more creation of innovation (Marin and Bell 2005) and a higher quality of innovation (Vives, Asakawa and Svejonova 2010), because it enables the subsidiary to deliver on user feedback. If the subsidiary has knowledge and local slack resources to be locally responsive, it may lead a subsidiary to act faster on emerging needs. This may result in a higher output of innovations (Ghoshal and Bartlett 1988) and provide grounds for better economical results on Group level (TB1 2015).

A high level of global integration is not on its own associated with higher levels of local (subsidiary level) innovative activity. It is only when a high degree of global integration is grouped with a high degree of local responsiveness that one may observe higher levels of local innovative activity (Marin and Bell 2005). This may imply that innovation should not be centrally driven and fully standardized by Telenor Group. Telenor Group may drive innovation through enablers such as the global backend services. However, due to varying requirements of the subsidiaries in different point in time, innovation should not be centrally driven (TP3 2015). Furthermore, innovation processes should not be centrally driven, because *"innovation is driven by people, not technology"*. The major element input is people, and every subsidiary has a different way of working because of cultural differences. Due to the cultural differences of the employees that drive innovation, Telenor Group should standardize innovation across all subsidiaries (TP3 2015).

In terms of being an innovative MNC, the findings may imply that Telenor Group cannot fully standardise innovation across the subsidiaries, but rather be an enabler of innovation, for instance through the global backend services.

Theoretical contributions

The theoretical contribution of this thesis has been to illuminate and better understand heterogeneity of innovative activity of subsidiaries within Telenor Group, and the subsequent implications for innovation management. A substantial part of previous research has focused their explanations of heterogeneity on patterns common to industries or specific locations, not patterns within an industry or more specifically within one company, in which this thesis has made a contribution.

Another contribution toward is towards the literature concerning (innovation) management and MNCs. This thesis offers insight related to how innovation is carried out in different Telenor Group subsidiaries, and the implications for innovation management.. This may contribute to an understanding of how corporate strategies and decision-making affect innovative activity at subsidiary level and vice versa.

The findings of this study are not generalizable in the sense that one will observe the exact same findings in other MNCs, however; there may be a form of theoretical 'transferability'. Knowledge about the characteristics of innovation, heterogeneity of innovative activity, and the implications for Telenor Group, may to some extent be transferred. This form of *'analytical generalization'* (Kvale 2007 p. 127), may point towards potential implications of this structure of innovative activities, might have in similar high technology companies.

This thesis also contributes to an academic debate concerning whether it is possible for a subsidiary to have a high level of global integration and a high level of local responsiveness. Some researchers (Peng 2009; Verbeke 2009) claim that in reality a MNC will have to make a choice between the two. The findings of this thesis has contributed to this debate by illustrating that Telenor Pakistan has a high degree of global integration *and* local responsiveness.

Research implications

This master thesis has demonstrated how quantitative and qualitative methods may purposefully be used for an empirical study of heterogeneity of innovative activity, across geographical dispersed subsidiaries and the implications of innovation management. Future research should attempt to broaden this perspective with comparative studies, both in the

telecommunications industry, and in other industries. Furthermore, future studies should examine factors that may explain further why heterogeneity arises. By including other exploratory factors, researcher may create a coherent explanatory framework of subsidiaries heterogeneity in innovative activities. Moreover, further research should further examine implications of heterogeneity, in relation to the host and home country economy. This is an important area of research, as it is related to MNC and FDI policy, which will be further discussed in the next section.

Policy implications

This thesis has several findings yielding potential policy implications. First of all, the illustration of subsidiaries heterogeneity implies that 'one size' may not fit all. This thesis has been a study of heterogeneity within a company, the policy implications of the findings indicate that policies intended for entire industries may not be appropriate due to the heterogeneity of the subsidiaries within the same industry. Thus, the idea of MNC subsidiaries operating in the same industry being homogenous may be wrong.

By offering insight related to subsidiaries conditions for innovation, how innovation is practiced in different subsidiaries and subsequent implications, policy makers may gain a better understanding of innovative activity by subsidiaries, at a national level. An increased understanding of heterogeneity of subsidiary's innovative activity may contribute to a more purposeful innovation policy, in order to stimulate innovation at the national level. An increased understanding of the implications of heterogeneity may also indicate how different policies may create different results.

More specifically the findings suggest that close integration towards the corporation may lead to relatively *higher* levels of local innovative activity. This is contrary to the view that FDI in general, and a high level of global integration specifically leads to relatively lower level of local innovative activity (Marin and Bell 2005). Consequently, policy initiatives should focus of incentive for both global integration and local responsiveness. Thus, not only offering incentives for local innovative activity, which have been common in FDI related policy.

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Appendices

Appendix 1. Introduction letter

Appendix 2. Interview guide

Appendix 3. List of respondents.

Appendix 1. Introduction letter

Dear ...

X has informed me of your expertise and knowledge of innovation at Telenor Pakistan/Telenor Bulgaria? Canal Digital AS. Jarle Hildrum of Telenor Research and Future Studies (Norway) is the supervisor for my master thesis, which I will write over the next year, at the Centre for Innovation, Technology and Culture, at the University of Oslo.

I'm in the starting phase of my master thesis "Innovation in Multinational Companies" and work under the preliminary research questions: '*What characterises innovation in a MNC?*', '*How and why does innovative activities vary across subsidiaries within the same MNC?*' And '*what are the implications of inter-subsidiary variations with regards to being an innovative MNC?*'

What I first intend to do is map the breadth and intensity of innovative activity (based on 'innovation expenditure' data on the project level of each BU). Further, to build up the case study I wish to conduct 2-3 interviews with representative from three BUs (Telenor Pakistan, Telenor Bulgaria and Canal Digital AS). Amongst other things the interviews aim to investigate the innovation processes -both normative and local practises, the degree of global integration and local responsiveness in the BUs, and adoption and diffusion of innovation.

This is where you come in. X has informed me that you have knowledge and expertise of innovation in Telenor Pakistan/Telenor Bulgaria/ Canal Digital AS. So my question is whether you would be interested in being one of the informants for my master thesis?

For Telenor Pakistan/ Telenor Bulgaria: If you are interested in being my informant you could choose whether you would like to conduct the interview over Skype or Telephone. An interview would normally last one hour, in which I also request the possibility to follow-up with some questions on e-mail, if needed.

All respondents of this master thesis will be anonymized. I will request that the interview is voice recorded. If this request is grated a copy of the transcript will be sent to you after the interview.

It should be lastly be noted that I have status as a student intern at Telenor Fornebu, and have signed an non-disclosure agreement.

Look forward to your reply!
Kind regards,
Elise Biørn-Hansen

Appendix 2. Interview guide.

Introduction
- Fully informed consent?
- Research questions and objective of the thesis
- Position at firm and employment history
- Findings from the quantitative analysis

- What are the most profound challenges in the subsidiaries? (This does not only have to include innovation)
- What role may innovation have in overcoming these challenges?
- What innovative activities are relevant for the BU? i.e. what does innovation mean in the context of Telenor Pakistan/Telenor Bulgaria/ Canal Digital AS?

Organization of the unit
- In general
- Product development/ innovation
- Who initiates development project, owns them
- (How does this affect innovation processes?)
- Communication and collaboration with other subsidiaries? With Telenor Group?
- Local autonomy
- Resources
- Shared goals, value, and strategy? 'The Telenor way'?

Innovation models
- What characterizes innovation work and processes at X BU?
- Use of the Telenor Project model? Why was it implemented? Challenges? Does it different from how you worked with innovation before the model?
- Open innovation? External vendor development? Other models/local variations?
- Describe how the unit works with one or two innovation projects. What process/model are applied?
- If applicable – why does the innovation processes vary from project to project?
- Adoption of innovation (from HQ and other subsidiaries)
- Diffusion (to HQ and other subsidiaries)

From the Bangkok summit:
- Ask about the relevant findings for each BU from the summit

Global integration

Introduction to the concept.

- Global backend services, what do they purchase or adopt from HQ/ group?

- Telenor Group involvement in initiating projects or trying to sell global services

Please answer the following questions on a scale from 1 till 5, where 1 equals 'strongly disagrees' and 5 equals 'strongly agrees'.

- The Telenor Group has centralized many functions such as HR, finance and procurement.

- The Telenor Group has to a high extent standardized products and services worldwide.

Local responsiveness

Introduction to the concept

- **S**pecific needs/traits of the local market they operate in?
- To what extent does the customer demand that products and services are adapted to their needs?

Please answer the following questions on a scale from 1 till 5, where 1 equals 'strongly disagrees' and 5 equals 'strongly agrees'.

- Telenor Pakistan/Canal Digital/ Telenor Bulgaria conducts many major functions locally.

- Telenor Pakistan/Canal Digital/ Telenor Bulgaria has adopted its products and services to a high degree to the local context.

Follow-up questions
- Examples that underpins their answers.
- In what way does responsiveness/integration affect innovation? Way of work?
- What is the goal of innovation processes? (i.e. new locally adapted products to respond to local demands or innovation that lead to increasing integration with the Telenor Group)
- Other thoughts, ideas, comments ect.?

Appendix 3. Respondents.

	Respondent	Location	Position/Area of work	Duration	Date
1	TP1	Telenor Pakistan	Manager Innovation and Internet Solutions Product Development, Commercial	1 hour (Skype) 1 hour (Skype) E-mails	August 26th 2014 January 29th 2015 February- August 2014
2	TP2	Telenor Pakistan	Manager Value Added Services	E-mail	November 25th 2014
3	TP3	Telenor Pakistan	Assistant manger new strategy and new business development	1 hour (Skype)	February 18th 2015
4	CD1	Canal Digital AS	Nordic head of Customer Intelligence and Insight	1 hour	February 3rd 2015
5	CD2	Canal Digital AS	Strategy and business developer	1 hour	March 3rd 2015
6	TB1	Telenor Bulgaria	Senior Strategy Specialist	1 hour (Skype)	February 17th 2015
7	TB2	Telenor Bulgaria	Strategy. Project and Portfolio expert.	1 hour (Skype)	March 11th 2015