

Brynjar F. Svarva

Healthcare Technology: The Space Race of the 21st Century

A case-study of the motivations of Norwegian actors in the healthcare technology industry

Master's thesis in European Studies

Trondheim, May 2017

Brynjar F. Svarva

Healthcare Technology: The Space Race of the 21st Century

A case-study of the motivations of Norwegian actors in the healthcare technology industry

Master thesis in European Studies
Supervisor: Pieter de Wilde
Trondheim, May 2017

Norwegian University of Science and Technology
Faculty of Humanities
Department of Historical Studies

 **NTNU**
Norwegian University of
Science and Technology

Abstract

This thesis aims at analyzing Norwegian healthcare technology actors' motivations for working in the healthcare sector, and to what extent the EU, and in particular the Horizon 2020 research program, affect these motivations. A fair amount of research has gone into mapping why researchers and a diverse range of actors may choose to participate in H2020 projects, and why they might choose to abstain. The Norwegian government has a clear intention to make Norway a major participant in EU research programs, increasing the H2020's impact on Norwegian research and business. We ask not the question whether H2020 has affected Norwegian innovation and research – it quite clearly has – but rather the question if it affects the innovators and researchers' motivations to work in healthcare in the first place.

The healthcare sector is in major growth, providing new and lucrative business opportunities for those who are able to assert themselves. Healthcare is also unique in the sense that it focuses on human lives, how to take care of each other, improving quality of life and how to prevent and cure diseases. Because of this, I have applied a theoretical framework consisting of rational choice theory, and the concept of logic of appropriateness. These two concepts explain the two possible outcomes that I want to explore: whether people work in healthcare because of self-rewarding opportunities, or because of a sense of idealism and altruism.

The thesis' main finding is that most healthcare actors work with healthcare from a desire to improve healthcare services, a desire to improve patients' lives, and more or less “do what is right”. This gives support to the logic of appropriateness. However, this does not mean that the rational choice theory is completely disproved. Healthcare actors recognize the need for funding and financial liquidity, or their work would not be possible. Other findings are for example that a sense of prestige and attention for working in high-level projects may affect motivations, along with advantages of working across borders and learning from others.

This thesis is based on information from relevant research literature, public documents both from the Norwegian government and the European Union, as well as semi-structured interviews conducted with relevant actors within the Norwegian healthcare technology industry.

The title is inspired by Eric Dishman, General Manager of Health & Life Sciences at Intel, and Vinod Khosla, founder of Khosla Ventures (CB Insights, 2016).

Acknowledgements

I would like to thank my supervisor, Pieter de Wilde, for his uncanny ability to say just the right thing and provide inspiration when I was stuck.

I would also like to thank my fellow students, and especially Nikolai and Knei. Your weird sense of humour makes every day a little bit more bizarre. The same goes for my eminent quiz-team, Kommissjonen. Weekly beers and quizzes with you is always a welcome break from writing, and I hope I will be as successful in life as I am every Tuesday from 19.00-21.00.

I am very grateful to my whole family. My sister, for sharing my pain with her own exams. Mom and dad, for always supporting me throughout my time at NTNU. A big thank you goes to my brother Martin, for his help in transforming this thesis into something I can be proud of. Finally, thank you Merete for your amazing dinners, and for taking care of me like a little brother.

Last, but not least, I would like to thank my informants. It was very generous of you to find time for my questions, I would not be able to produce this thesis without you. I hope you all succeed in your endeavours of improving Norwegian healthcare.

Brynjar Fredus Svarva

Trondheim, May 15th, 2017

Abbreviations

EU – European Union

FP – Frame Program

H2020 – Horizon 2020

EEA – European Economic Area

OECD – Organization for Economic Cooperation and Development

FP6 – Sixth Framework Program

FP7 – Seventh Framework Program

UN – United Nations

ERA – European Research Area

SPH – Scientific Panel of Health

ICT – Information and Technology Communication

Table of Contents

Abstract	ii
Chapter 1 Introduction.....	1
1.1 Subject	1
1.2 Previous research.....	2
1.3 Literature review	4
1.4 Background	4
1.4.1 The global health challenge.....	5
1.4.2 Horizon 2020.....	7
1.4.3 The EU's approach to health policy	8
1.4.4 Norway and the EU	9
1.5 Structure	11
Chapter 2 Research question and theoretical framework	13
2.1 Research question.....	13
2.2 Theory and concepts.....	14
2.2.1 The concept of Innovation.....	14
2.2.2 Rational Choice Theory.....	16
2.2.3 Logic of appropriateness	19
2.2.4 Weber's rationalism	20
2.3. Subordinate research questions	21
2.4 Application of theory.....	23
Chapter 3 Method.....	27
3.1 Multiple case study.....	27
3.2 Interview as method	28
3.2.1 Conducting the interviews.....	30
3.3 Operationalization	31
3.4 Case selection	32
3.5 Data selection and collection.....	34
3.6 Limitations and Generalizability	35
3.6.1 Missing data	35
3.7 Method of analysis	35
3.8 Questions.....	38
Chapter 4 Analysis	41
4.1 Themes	41
4.2 Responses	42

4.2.1 Benefits of EU projects	42
4.2.2 Problems with EU projects.....	45
4.2.3 General problems	47
4.2.4 Motivations.....	50
Chapter 5 Summary.....	57
5.1 Subordinate research question 1	57
5.2 Subordinate research question 2.....	58
5.3 Subordinate research question 3.....	60
5.4 Conclusion.....	61
Chapter 6 Concluding remarks.....	63
6.1 Potential weakness'	64
6.2 Future research	65
Bibliography.....	67
Appendix 1: Interview guide.....	71

Chapter 1 Introduction

1.1 Subject

“Preventing disease, prolonging life and promoting health is best achieved through the integrated and organized efforts of research and society at all levels. This requires not only national action, but intensified cooperation at European and global levels.” (Scientific Panel for Health, 2016, p. 4)

The search for longevity is not something new. In the 16th century, the infamous Spanish explorer Juan Ponce de León searched in vain for the “Fountain of Youth”, which would have granted eternal life to whomever drank from its waters. Today, the number of years one lives is backed up by a desire to improve the quality of those years. Different from the olden days, is today's research methods used for achieving this goal. Instead of navigating with antique maps, money is being poured into state of the art research, to stimulate innovative processes and produce new and better ways of improving people's health and lives. The member states of the European Union (EU) currently find themselves at an unprecedented level of health and wealth, people live longer and better than only 20 years ago, and the nations of Europe have experienced a steady increase in economic prosperity since the 1980s (Ståhl, Ollila, Wismar, Lahtinen, Melkas, Leppo, 2006).

It cannot be taken for granted that this development will continue. Despite economic prosperity, socioeconomic inequalities remain and have grown, and with it, poorer average health (Ståhl et al., 2006). Today, the world faces challenges that are as numerous as they are varied, and one that clearly stands out is health related issues, brought on by a growing and ageing world population. Old populations alone, as a phenomenon, has a wide range of impacts, both economically and socially, and they are fast approaching: numbers from the United Nations World Ageing Report shows that the global population of people aged 60 or older will be doubled by 2050, from 2015, reaching nearly 2,1 billion people (UN, 2015). Along with the cognitive decline of an old population, an increase in numbers also means an increase in chronic diseases, along with lifestyle problems like obesity (Ståhl et al., 2006).

However, measures are being taken to address this challenge. In Europe, the European Union is leading the charge for better research and development around the continent through its Horizon 2020 (H2020) research program. Horizon 2020 makes funding available for

researchers in a variety of different types of research, where health and welfare make up an important part of the overarching “Societal Challenges”-branch of H2020 (European Commission, 2017b). The massive opportunities and challenges that healthcare provides, has led certain leaders in healthcare to declare this development as the “next space race”, as the healthcare industry is on the brink of a technological revolution (CB Insights, 2016).

In response to this, the Norwegian government has formed a clear and concise goal: to become one of the most innovative countries in Europe (Utenriksdepartementet, 2014). Considering the fact that the H2020’s total budget is €80 billion, 2% certainly is a substantial amount of money. In comparison, the Norwegian government granted a total of €3,4 billion to research and development over the state budget for 2016-2017 (Finansdepartementet, 2016). The fact that Norway’s contribution to the EU’s programs for innovation, research, culture and education alone is around €3,2 billion (Utenriksdepartementet, 2014) certainly justifies Norway’s desire for a high return share. To make this happen, the government has set aside more than €40 million to stimulate the Norwegian communities’ participation in H2020 (Kunnskapsdepartementet, 2014b). The government aims for a return share of 2% from the H2020 total funds (Kunnskapsdepartementet, 2014a), a return share that may seem like a lot of money, but when you look at Norway’s rather considerable contributions, having high ambitions for the return share seems reasonable: not only to “get our money back”, but also to push the innovation process forward. The rewards for excellent research that Norway receives from participation in the H2020 are beneficial in more ways than just financially.

Building on the goals of the EU and those of Norway, this thesis aims to explore what motivates individuals to work in healthcare technology innovation. Different possible explanations exist. For instance, personal financial success and prestige could be a driver in a potentially very lucrative business, as well as the learning opportunities of working in international projects, or more human aspects, such as empathy and idealism.

1.2 Previous research

From what I have gathered, there seems to be little research on the topic I’m discussing in this thesis. Online search reveals only studies which explore motivations in adopting new treatment systems, procedures or similar in healthcare. A research article by Länsisalmi, Kivimäki, Aalto, and Ruoranen (2006) offers a review of research in healthcare innovation, where the majority of the identified studies dealt with adoption of innovations and new practices, highlighting some

of the same issues discussed in this thesis, for example in regard to implementation of new technology etc.. There are also many studies made on the experiences from and motivations for participation in Horizon 2020. For instance, in a study made by Forskerforbundet (2014), as a reply to the Norwegian government's strategy for participation in Horizon 2020, they set out to map the experiences of their members in the EU's frame programs. That study moves in another direction than my thesis: exploring why actors participate in Horizon 2020, and not why actors "participate" in healthcare in the first place, so to speak. It nonetheless accentuates many of the same challenges as this thesis, e.g. that my respondents believe application procedures to H2020 are too complicated, and that there are heavy, indirect costs related to the application process (Ibid).

Furthermore, a study conducted by NIFU STEP (Norwegian Institute for Studies of Innovation, Research and Education) is a more factually based study, presenting numbers and an evaluation of Norway's participation in the 6th and 7th EU Frame Program (FP). The purpose of this evaluation is to provide a basic knowledge and understanding of the challenges Norway faces in the FPs, and a foundation for development of strategies and policies for Norwegian research (Godø, Langfeldt, & Kaloudis, 2009). Although this study also focuses on participation in EU projects, it could perhaps have an indirect impact on the research question for this thesis. Since its purpose is to serve as a roadmap for strategy development, the government may adjust their strategies for EU attachment which again may have an impact on actors in healthcare technology. This would only serve as speculation however, and not something I believe would affect the outcome of this thesis.

Finally, a master thesis was submitted at NTNU November 2016, with the title "Norwegian Health Researchers' Motivations for Participation in Horizon 2020" (Litsheim, 2016). This thesis aims to analyse Norwegian health researchers' perception of the EU Framework Programmes, and tries to understand and explain why some may choose to abstain from the Horizon 2020. It builds to a much larger degree on the research mentioned in the two previous paragraphs, and with the same objective, thus having little impact on this thesis. On the other hand, it does utilise the logic of consequentiality, or rational choice theory, and the logic of appropriateness as its theoretical foundations, as I will partly do in this thesis. It also uses the concept of Europeanization to a large degree, actively analysing whether this phenomenon has influenced Norwegian health research. While building on the same theoretical foundation, and investigating motivations as a phenomenon, the similarities between these two theses end there.

The apparent lack of research into motivations for working in the field of healthcare technology leaves room for exploration for this thesis. Instead of focusing on researchers and actors, and their motivations for working with EU projects, we look at it from the opposite direction: how the EU affects actors' motivations for working in healthcare.

1.3 Literature review

This thesis draws its information from a variety of sources: Research literature, public government documents, public EU documents, combined with empirical data collected doing semi-structured interviews with relevant actors in the field of healthcare technology. Apart from public documents, almost all the sources used are academic or scientific sources, with a few exceptions being news articles from online newspaper such as E24, Norway's largest online newspaper on economy and business. The public EU documents are all published by the European Commission, and can be considered trustworthy. I don't believe the potential subjectivity of EU documents can compromise the integrity of this thesis, as these documents are not particularly sensitive, simply providing facts about Horizon 2020, for example. One could perhaps argue that the *Together for Health* (European Commission, 2007) and *Investing in Health* (European Commission, 2013) documents could be biased towards the Commissions interests. However, I avoid any potentially biased conclusions by only using data that they present, as well as goal targets, strategies or similar. The same goes for the public documents published by different departments of the Norwegian government. Chapter 3.3 in the method-section discusses the use of interviews as a source of data collection more closely.

1.4 Background

In order to properly understand the implications of problems in healthcare, it's global reach and the future challenge of providing adequate healthcare for everyone, a section addressing these issues is necessary. It also provides context to the research question. This section starts with a wide overview, addressing the problem on a global scale. It narrows further in on the EU, explaining the Union's stance on health-related issues. The most essential part of this is the research program Horizon 2020, which makes up the subsequent paragraph. A short overview of H2020 is necessary, in order to understand its scope, goals and impact areas. Table 1 gives a full overview of the H2020 structure, where the challenge of health belongs to the Societal Challenges-pillar, one out of three pillars. Lastly, Norway and its relationship with the EU makes up the final paragraph. Norway's relationship to the EU is central, because it lays the

groundwork for explaining how individuals may act relative to H2020, and how H2020 may influence their motivations for working in healthcare. This final paragraph ties together the backdrop for the research question regarding the concept of healthcare.

1.4.1 The global health challenge

The challenges facing Europe today are many and diverse, and one of the bigger issues is the problems related to health and welfare: demographics all over Europe are moving towards older populations and relatively fewer young people. The United Nations' report on world population ageing leaves no doubt: The human population is ageing, and virtually every country in the world is experiencing an increase in the number and proportion of older persons in their population (UN, 2015). Of all the challenges facing the world today, population ageing marks one of the most significant social transformations of the twenty-first century, with implications for almost every single sector of society, for instance housing, transportation, social protection, family structures, both private and public economy, labour markets, etc. (Ibid). In this period of health and welfare challenges, and rapid technological change, both the Organisation for Economic Co-Operation and Development (OECD) and the EU have expressed concerns that health-care systems are coming under increasing pressure due to rising expectations of high quality care (OECD, 2009).

One of the biggest issues with healthcare is the ever-increasing expenditure of taking care of a growing and ageing population. The concept of the welfare state relies on there being enough people working and paying taxes to cover the expenses for those who cannot work, and in virtually all OECD countries, healthcare spending has outgrown both gross domestic product (GDP) and per capita income (OECD, 2009). The share of total resources in the total OECD economy absorbed by spending on health goods and services is large, and is ever increasing. Figures show that healthcare spending has almost doubled since 1970, and consisted of just under 9% of GDP by 2006, right before the crisis years of 2007 and 2008 (Ibid). The growth is also expected to continue, despite the recent economic downturn in much of Europe. An OECD-wide¹ increase of 50% per capita health spending indicates that there is a strong need for better solutions in the field of health and welfare, fuelled by the growing and ageing populations.

¹ This includes only current members of OECD

Norway also has a particular challenge with sick leave, which has increased, while other countries have managed to reduce it (Finansdepartementet, 2017). Figure 1 visually presents statistics related to ageing and disability. Figure 1A shows how the number of elders is

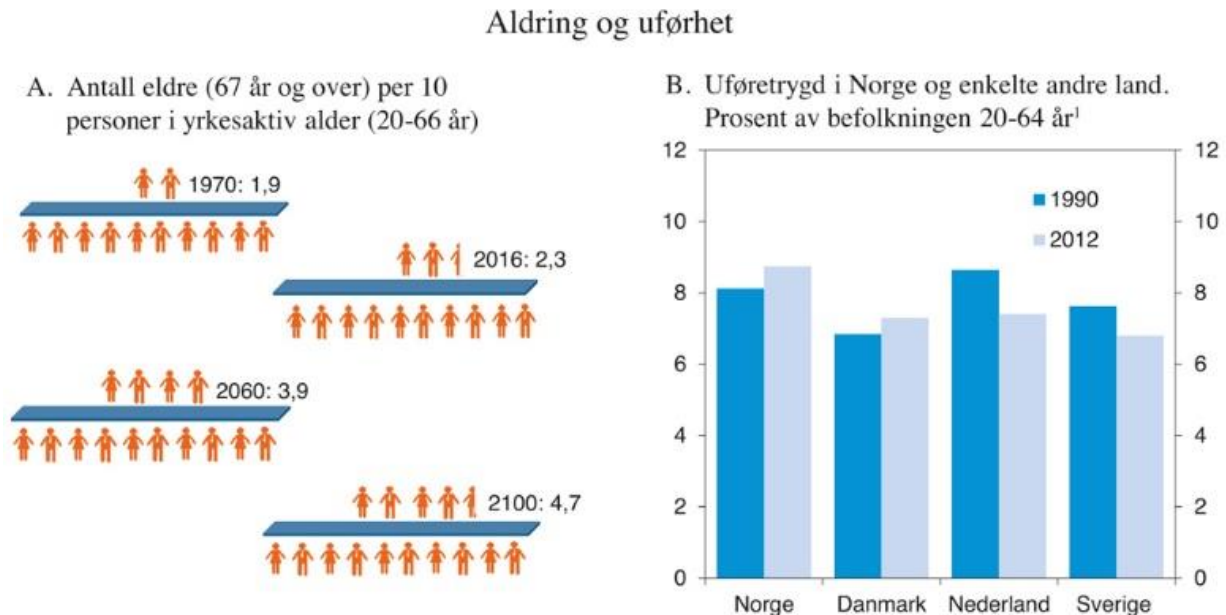


Figure 1: Ageing and disability

A: Number of elders (67 years and above) per 10 persons in labour active age

B: Disability benefits in Norway and other countries. Percentage of population 20-64 years

Source: Finansdepartementet (2017)

increasing relative to the number of people in active labour age, and Figure 1B shows how Norway seems to be worse off than other, comparable countries regarding disability benefits.

This poses a series of questions that need answers: How do we take care of our elders? Are there enough young people to work jobs that take care of them? How do we maintain economic growth with an ageing labour stock, decreasing tax revenues and increased pension spending? Are there medicines to tackle new diseases, and are they available in quantity? The Scientific Panel for Health (SPH) writes in their Vision Paper: one of the best solutions is to “prevent disease, prolonging life and promoting health” (SPH, 2016, p. 4). By enabling people to work and stay active well into their older years, some of the pressure, both economically and socially, of taking care of them can be relieved. To achieve this, new enabling methods must be found, along with new, effective medicines. Innovation is a key concept that countries must embrace

in order to face these challenges, where new technology, better infrastructure, smarter routines and organizational planning can alleviate the pressure.

1.4.2 Horizon 2020

After being called upon by EU Heads of State and Governments in 2011 to pool all previous EU research and innovation under a common strategic framework, the European Commission launched Horizon 2020 in 2014 after a wide-ranging consultation process (European Commission, 2017a). Horizon 2020 is the biggest EU Research and Innovation program ever, with nearly €80 billion over 7 years, lasting until 2020, in addition to attracting a lot of private investment (European Commission, 2017b). Horizon 2020 is the financial instrument implementing the Innovation Union, a massive initiative aimed at increasing and securing Europe's global competitiveness (Ibid). With the backing of political leaders and the European Parliament (EP), H2020 is viewed as a tool to drive economic growth and job creation, and is put at the heart of the EU's blueprint for smart, sustainable, and inclusive growth (Ibid).

STRUCTURE OF HORIZON 2020

Excellent Science	Industrial Leadership	Societal Challenges
European Research Council	Leadership in Enabling & Industrial Technologies	Health, demographic change and wellbeing
Future and Emerging Technologies	- Information and communication technologies	Food security, sustainable agriculture, marine and maritime and inland water research and bioeconomy
Marie Skłodowska-Curie-Actions	- Nanotechnologies	Secure, clean and efficient energy
Research Infrastructures	- Advanced materials	Smart, green and integrated transport
	- Biotechnology	Climate action, environment, resource efficiency and raw materials
	- Advanced manufacturing and processing	Europe in a changing world- inclusive, innovative and reflective societies
	- Space	Secure societies – Protecting freedom and security of Europe and its citizens
	- Access to Risk Finance	
	- Innovation in SMEs	

Table 1: Structure of Horizon 2020

Source: Ministry of Higher Education and Research (2015)

The goal of H2020 is to ensure that Europe excels in science and innovation, stimulating cooperation between private and public sectors and helping them achieve in delivering innovation (European Commission, 2017b). Because Horizon 2020 has a strong focus on

increasing competitiveness, application processes to research projects are tedious and difficult, and only the best ideas and concepts get through the procedure of application, and can receive funding. After the first four years of H2020, the EU will have invested over €2 billion to address the challenge of Health, Demographic Change and Wellbeing², aiming to keep older people active and independent for longer, the development of safer and more effective interventions, and contributing to the sustainability of healthcare systems (Ibid). The challenges to these goals derive from the ageing of the European population and lifestyle patterns, which will increase the burden on existing health and care systems and on society, if they are not properly addressed (European Commission, 2016).

1.4.3 The EU's approach to health policy

Health policy is normally regarded as a matter of national concern, but the EU has to some degree been active in this field as well. E.g., the strategy “Together for Health” was launched in 2007 with the aim of improving coordination and cooperation across member states of the EU, responding to the challenges they are facing and complementing their national health policies in areas where acting alone is ineffective (European Commission, 2007). The EU recognises health as a value in itself, and a precondition for economic prosperity, influencing outcomes in terms of productivity, labour supply, human capital and public spending (European Commission, 2013). Furthermore, although the expenditures on healthcare are enormous, it is recognised as a growth-friendly expenditure, as it can increase the quantity and productivity of labour. However, this requires more efficiency and cost-effectiveness to ensure the sustainability of current health systems (Ibid). The structural changes in demography, as explained in the previous paragraph, along with problems caused by the economic crisis of 2008, has reinforced the need to reform and modernise those systems. By improving cost-efficiency through sound innovation and better assessments of healthcare systems, the EU believes it can help member states to do so (Ibid).

Furthermore, regulation is one of the activities that a government or a political body like the EU can engage in and which can exert a profound impact on the level and direction of innovation, both in specific sectors and in the economy as a whole (Pelkmans & Renda, 2014). Regulation is not always an obstacle to innovation, and economic literature has recognized that

² See table 1 for full overview of the designated challenges included in Horizon 2020

regulation on innovation can be a powerful stimulus to innovation and entrepreneurship (Ibid). There are many different types of regulation, like regulation through information, self-regulation, standardization and market based instruments, not to mention funding. Research suggests that in order for innovation to occur, entrepreneurs must have willingness, opportunity/motivation, and capability or capacity to innovate, and that regulation can affect all three aspects (Ibid). The ultimate impact of regulation on innovation is of course an empirical, case-by-case question, and a consideration between factors inducing and constraining towards innovation. In any case, Pelkmans and Renda write that the more regulation is flexible, the more innovation can be stimulated (Pelkmans & Renda, 2014, p. 8). The case of healthcare however is arguably dependent on certain regulations not being too flexible or lenient, for example on disclosing private information, patient journals etc.

With new technological opportunities, the nature of healthcare is changing from a “one size fits all” approach to individual treatments, by integrating data on the entire dynamic biological makeup of each individual and identifying the most appropriate healthcare for each citizen (SPH, 2016). However, this personalised form of healthcare is complex. Research will have to integrate population-level genetic, lifestyle and environmental data to understand individual responses to disease and treatment, by combining biology with the digital revolution to develop consumer devices (Ibid). The EU has identified six actions to maximize the potential of personalised medicine, mainly consisting of combining and coordinating cross-country expertise on technology development, and developing necessary interdisciplinary environments, points central to the *modus operandi* of the Horizon 2020 program (Ibid). Bridging different sciences and sectors, new perspectives can help solve common problems and release potential that no actor could accomplish on their own. As we shall see in chapter 4.2.1., this is something informants appreciate and believe can be a great motivator for working with healthcare technology.

1.4.4 Norway and the EU

Norway is tied to the EU through the European Economic Area- agreement (EEA), which secures Norway’s full participation in and access to the EU’s internal market of 500 million consumers. A common European rule framework also applies for Norway, and it makes sure that Norwegian companies compete on equal terms with companies from the EU (Ibid). Being a part of the EU and cooperating with the European community serves many purposes: to build quality in research, strengthen innovation and competitiveness in European and global markets,

and develop solutions to societal issues like health and welfare services (Kunnskapsdepartementet, 2014a).

After the ratification of the European Economic Area Agreement (EEA) in 1994, research and education has gained more political attention on the European level, and Norway's cooperation with the EU has grown in both scope and budget (NOU, 2012). Today, the EU has strong ambitions towards establishing Europe as an area of shared knowledge with a free flow of scientists and students – also known as the “fifth freedom” (NOU, 2012; Potocnik, 2007). The EEA agreement secured Norway its full participation in the EU's frame programs for research and technology (FP), as well as different programs that promote mobility among students, trainees, and employees in the educational system (NOU, 2012). In the case of health, the Treaty of Lisbon states that health policy is a national responsibility, but EU countries are nevertheless free to cooperate on common challenges (Utenriksdepartementet, 2015). However, developments in EU legislation in areas such as health security, food, tobacco, medicines, cosmetics, cross-border healthcare and medical equipment also applies in Norway through the EEA Agreement (Utenriksdepartementet, 2015). There are also numerous indirect influences on national health policy. The fundamental free movement is a prominent example, along with rules for professional competence, harmonization of healthcare rights for workers from other countries, and harmonization of pharmaceutical regulations (NOU, 2012, p. 479)

The EEA has adapted to both routines and changes in the EU's knowledge policy, which has proved fruitful to secure Norwegian participation in the most important new initiatives and processes on research, development, and education. There is broad political agreement on the value of internationalization of research and higher education (NOU, 2012). Many countries are exploring ways to improve the performance of healthcare systems, among other things, by enhancing cost efficiency and effectiveness of care. Such efforts should improve the longer-term financial sustainability of healthcare systems, particularly in countries where expenditure spending is already high (Ibid). Research cooperation on the European level has seen some major changes after 1994, with a significant increase in both budget and instruments for the FPs. The European Research Area (ERA) has been established and is legally embedded in the Treaty of Lisbon, with hopes of improving Europe's scientific competitiveness.

The Norwegian government has four main goals for Norwegian participation in Horizon 2020 and the European Research Area (ERA). These include increased quality in research and innovation, increased innovation capability, better welfare and societal sustainability, and

improvement in domestic research- and innovation sectors (Ibid). According to the Ministry of Education and Research (Kunnskapsdepartementet, 2014a), the ambitions are high, but the Norwegian research communities and milieus are not taking properly advantage of the possibilities presented to them from working with the European communities on research and innovation. The Norwegian government's "Strategy for Research- and Innovation Cooperation with the EU" underscores that good participation in Horizon 2020 is a prerequisite if these goals are to be met. To achieve this, a vast mobilization in both width and expertise is necessary, and, as mentioned in chapter 1.1., the government aims for a return share of 2% of the total H2020 funds exposed to competition (Ibid).

1.5 Structure

Chapter 2 presents the research question, and the theories and concepts that will help me answer this question. The concept of innovation, the rational choice theory, with its logic of consequentiality, the logic of appropriateness, and rationalism as understood by Max Weber makes up the theoretical foundation for this thesis. The chapter also presents three subordinate research questions, which together, will answer the main question.

Chapter 3 is the chapter on method. Here I will present the method of a multiple case study, and how interviews have been used as data collection method. The chapter also presents how the research questions are operationalized, how and why the cases were selected, how the data itself was selected, the limitations and generalizability of the thesis, and the pitfalls of interview as a method through a paragraph on potentially missing data. Finally, it presents some of the questions from the interview guide.

Chapter 4 presents the analysis. It starts with presenting the themes that are reoccurring in the interviews, and why they are chosen to provide data on the research question. Then it presents all the responses to the respective themes and analyses them in the context of the theoretical foundation.

Chapter 5 sums up the findings from chapter 4, and provides answers to all the subordinate research questions. The chapter ends with a final conclusion to the main research question

Chapter 6 provides some concluding remarks, including what potential weaknesses this thesis may have, and suggestions for potential future research.

Chapter 2 Research question and theoretical framework

2.1 Research question

This thesis aims to find out what motivates actors to work in the field of healthcare technology innovation. Technology is a key word here, as it connects the actors to the innovation part of the healthcare eco-system. For the most part, this does not include employees in general in the healthcare industry, e.g. nurses, doctors, therapists etc. A crucial issue of this paper is how important the EU is to the individuals that work with health technology in Norway, mainly driven through the Horizon 2020 research program. As we've seen from chapter 1.1. and 1.4.4., the Norwegian government has taken a clear stance on how and to what extent it wants to participate in H2020, and the ambitions for Norwegian research in general are clearly articulated. As Norwegian Prime Minister Erna Solberg writes, "strong, Norwegian participation in the European research and innovation cooperation is a prerequisite for us to succeed with our commitment to knowledge. This is not something our researchers can opt out on. Each and everyone needs to find their way in" (Kunnskapsdepartementet, 2014a). The question we want to ask is not "what motivates actors to participate in Horizon 2020". According to the Prime Minister, it seems that researchers have no choice but to participate, effectively removing or overshadowing any personal preferences that actors may have regarding such international forms for cooperation. We want to look at it the other way around and ask: What motivates actors to work in the healthcare technology industry, and does the EU influence their motivations? On this foundation, this thesis has the following research question:

What motivates individuals to work in the Norwegian healthcare technology industry, and how does EU policy on healthcare affect these motivations?

If we take a look back at chapter 1.4.1, healthcare spending is increasing, perhaps to the level where it threatens the welfare state. How long will it take with the current rate before workers are too few, the retired and sick too many, and the numbers don't add up? It is incredibly important that we find solutions in healthcare, and as the SPH writes, preventing diseases, prolonging life and promoting health is a part of the solution (SPH, 2016), something that can be done through healthcare technology.

Not much research is found on what would motivate either companies, research institutions or individuals to try and come up with better, cheaper, and more effective technology to help curb the problems related to health and welfare. That leaves room for this thesis to try and fill that

gap, by charting out “why people do what they do” in the healthcare technology industry. There are many possible motives for this, and due to the fact that this field of technology is related to people’s health and wellbeing, there are certain factors that perhaps could be considered characteristic to this field, e.g. emotions and feelings. Healthcare, in the end, does revolve around individuals and their destinies, implying that emotions and values play a major role when one chooses a career in this industry, at least to a larger extent than in other industries.

On the other hand, having a healthcare market which has grown considerably for a number of years, and with an increasingly large amount of money available for research one shouldn’t discount the possibility that pure profiteering is the main goal for many firms and/or individuals. Not that this is wrong – a lot can be achieved while at the same time being financially successful, especially if it improves human lives in an ethical way. In any case, with ever growing and ageing populations, there is indeed a very real demand for better solutions in a growing market.

2.2 Theory and concepts

2.2.1 The concept of Innovation

In the following, I will present a definition of the concept innovation. It is necessary to understand this concept to the full, as its definition and application has implications for how we understand the answers to this thesis’ research question. As we learned from chapter 1.4.2. on H2020, innovation is the main concept of Horizon 2020, producing excellent science, promoting industrial leadership and tackling societal challenges. An account of the concept of innovation, and what it means for Norway is therefore necessary.

The Norwegian government defines innovation as the following:

A new invention or idea does not become innovation before it is put to practical use (...). This can happen in several different ways - by launching a new product or service, a new process of production, a new application, through market adaption or through new organizational forms that create economic value. One usually counts four different types of innovation: product innovation, market innovation, process innovation and organizational innovation. “Innovation” is a broad definition and can be closely related to research and development, but also to practical changes in individual work places. In the long run, innovation is a key factor to the competitiveness and sustainable growth of businesses and countries. At the same time, we know that the government can play a central role

in facilitating an increase of innovation in society. That is when innovation policy becomes important (Nærings & Fiskeridepartementet, 2010).

Fagerberg, Mowery and Nelson (2005) also make the distinction between invention and innovation: “Invention is the first occurrence of an idea for a new product or process, while innovation is the first attempt to carry it out into practice. The distinction may sometimes be difficult to see, and as it turns out, there is a lot of invention going on in Norwegian health technology, but the innovation often strands prematurely. To be able to turn an invention into an innovation, a firm normally needs to combine several different types of knowledge, capabilities, skills, and resources. For instance, the firm may require production knowledge, skills and facilities, market knowledge, a well-functioning distribution system, sufficient financial resources, and so on (Fagerberg, Mowery, & Nelson, 2005). So, to sum up, innovation is not just creating something new in itself. A lot of thought, energy and money is needed to make projects viable, and this is where the H2020 research program makes itself relevant by offering opportunities for funding, extensive networks, and knowledge sharing. The problem arises when a new innovation never sees the light of day, and the innovation process stops before it is completed.

There are a number of interesting points in these definitions that I would like to comment on. First of all, a new invention or idea does not become innovation before it is put to practical use. As we shall see later in this thesis, this has been a recurring problem in parts of the healthcare sector in Norway, confirmed by numbers from the Norwegian Statistical Bureau (SSB) and Eurostat (Sand, Schiefloe, & Aasen, 2005). Pilot projects are successful, evaluated and researched through and through, but we rarely see them as end products with any substantial impact on the market. They usually stagnate due to what some of the informants could only describe as organizational inertia, resistance to change, and a tendency to uphold the same trajectory as before, showing little willingness to change routines or invest resources on new methods. Empirical innovation research has also revealed a high level of “path dependence” in the evolution of knowledge and institutions, as we tend to be impeded by vested interests and inertia of existing structures (Smits, Kuhlmann, & Shapira, 2010). Such resistance to change is also a known phenomenon in psychological literature (Oreg, 2003). I will return to these issues in chapter 4. An important question then arises: If innovation is to implement something or put it into action, does the H2020 *de facto* affect the Norwegian healthcare technology innovation process if the products or services are not put to use, even though it may have funded the

invention process? This problem will be addressed in one of the three sub-questions, which I will return to in chapter 2.3.

Second, the four different types of innovation are important, as it paints the term innovation with a broad brush. In the case of Horizon 2020, there are many types of innovation taking place, and this thesis does not seek to exclude any type of innovation. Areas of impact can be wide in terms of different types of innovation, and we want to cover as many as possible. Lastly, the definition notes that the government can play a central role in facilitating innovation, and that innovation policy is important. Comprehensive reforms have been made in the national innovation system in Norway, by re-organizing the Norwegian Research Council (NRC), the creation of Innovation Norway, and the Quality reform, a political reform to strengthen University contributions to business (Sand et al., 2005). This is quite interesting, especially because we know that the EU does not have any legislation on innovation. That is something we need to take into account, as it could have a certain impact on the viewpoints of the relevant actors. The lack of formal EU policy on innovation is also why this thesis only focuses on the impact of H2020 on actors in healthcare technology, because there are no judicial channels the EU can pursue in order to influence Norwegian domestic innovation or healthcare policy. However, we must keep in mind that, although there is no direct influence on policy from the EU, as we saw from chapter 1.4.4, Norwegian healthcare policy has been Europeanized, due to domestic adaptations to EU legislation that indirectly affect this policy (NOU, 2012).

2.2.2 Rational Choice Theory

Political scientists, sociologists and psychologists have sought to build their own theories around the idea that all action is fundamentally “rational” in character, and that people calculate the likely costs and benefits of any action before deciding what to do (Scott, 2000). This approach to theory is known as rational choice theory, also known as logic of consequentiality or expected utility (Balsiger, 2014; Weber, Kopelman, & Messick, 2004). For the sake of clarity, it will mainly be referred to as the logic of consequentiality.

Rational choice theory is the dominant theoretical framework applied to decision making in social dilemmas and dilemma-like situations (Weber et al., 2004). In the logic of consequentiality, individuals are motivated by the wants or goals that express their preferences. They act within specific, given constraints and on the basis of the information that they have about the conditions under which they are acting (Balsiger, 2014). George Homans, a

pioneering figure in establishing rational choice theory, argues that human behaviour, like all animal behaviour, is not free but determined, shaped by rewards and punishments (Scott, 2000). Furthermore, rational choice theorists also recognize that the threat of punishment or the promise of a reward may motivate people just as much as the punishment or the reward itself. Their concept of logic of consequentiality sees social interaction as social exchange modelled on economic action, where rewards and costs of action motivate people and by the profits that they can make. More simply put, rational individuals choose the alternative that is likely to give them the greatest satisfaction (Heath, 1976).

According to Heath (1976), the rational choice theory can be split into a set of distinctions. The first one, he explains, is *the theory of riskless choice*. This part of the overall theory is very simple: it assumes that an individual can rank all the alternatives open to him in order of preference, and will select the most favourable one, or “the one at the top of the list” (Heath, 1976, p. 8). This principle is also known as the principle of utility maximization: “to choose the most preferred alternative is to choose the one which yields most utility and to maximize utility is therefore to select the alternative you like best” (Heath, 1976, p. 8). The basic idea of the theory of riskless choice, is simply that in situations of certainty, one chooses the course of action that yields the most desirable consequence.

The second set of distinctions of rational choice theory, is the *theory of risky choices* (Heath, 1976). Although the principle of utility maximization is naturally the most desirable, it is not always applicable. A situation of “risky choices” is undoubtedly the one that most actors come across, due to the fact that absolute certainty in real life is quite rare, if not to say impossible. As far as innovation goes, there is indeed a lot of uncertainty involved, because of the nature of innovation itself: It is an attempt to create something new, based on a perception of need in a market, something I explained in chapter 2.2.1. As mentioned in the case of Norwegian healthcare, organizational inertia and a sluggish system creates obstacles for innovation and undoubtedly presents the actors with risky choices (Smits et al., 2010).

The logic of consequentiality is chosen for this thesis because of the fact that healthcare is a growing industry with expanding markets. This means opportunities for doing business and making money. Rational actors will recognize these opportunities and position themselves in order to benefit from them, with a goal of gaining something for themselves. The reasoning goes as such: We know, according to logic of consequentiality, that actors will choose the action that gives the most desirable outcome, either because the profits are big, or because the costs

from choosing an alternative action are too high. It is thus natural to ask whether the informants themselves feel that this is the case, hence my first subordinate research question, in chapter 2.3.

However, there is some criticism against the logic of consequentiality that we need to take into account. For instance, claims Heath (1976, p. 75-76), ordinary people are simply not as rational as the theory requires: considerations and evaluations of alternatives do not really take place in the required way, and they do not contemplate or deliberate at any length of time, or collect information about the situation before they make their decision. A second line of criticism is that people do not maximize anyway, but instead satisfice, choosing an alternative which provides a satisfactory outcome but not necessarily the best outcome available (Heath, 1976, p. 87). In layman's terms, rational choice theory fails to explain "stupid" decision making, e.g. decisions that more or less deviate from what would be considered the best choice. Also, the most rational choice requires perfect information on all possible circumstances, outcomes and costs (Ritzer & Goodman, 2003), a situation that very few people ever find themselves in.

One problem with an individualistic theory is to explain and take properly into account the existence of larger structures: how is it possible that individuals co-operate in groups, associations, and other forms of joint actions? That is the problem of collective action. In what is called a zero-sum game, one person only benefits when the other loses. So why should individuals ever choose to do something that will benefit others more than, or at least as much as, themselves, if they calculate what personal profit they can make from every course of action? (Scott, 2000). A related question to the problem of social norms is why people seem to accept and follow norms of behaviour that can override their self-interest, e.g. by acting in altruistic ways or having a sense of obligation to others (Scott, 2000). In other words, logic of consequentiality has problems explaining why social norms, especially those of altruism, reciprocity and trust, sometimes seem to override rational calculation when a decision is made. On the other hand, giving help can also be an act of rational self-interest, and people may want to help others and get a sense of satisfaction from doing so. Some rational choice theorists argue that where social exchanges are recurrent, rather than episodic, it is possible that co-operation leads to mutual advantage, even if it does not produce the maximum outcome for any one participant. They learn that co-operation, rather than pure self-interest, is the optimum strategy (Scott, 2000).

2.2.3 Logic of appropriateness

Where the logic of consequentiality struggles to explain motives that are not driven by self-interest or with the goal of gaining something, we can look to sociological institutionalism for a new perspective. The logic of appropriateness is a perspective that sees human action as driven by rules of appropriate or exemplary behaviour, organized into institutions (March & Olsen, 2004). These actors try to do the right thing, rather than pursuing own interests and trying to maximize their utility based on these. Rules are followed because they are seen as natural, rightful, expected and legitimate, and actors seek to fulfil the obligations encapsulated in a role, an identity, a membership in a political community or group, and the ethos, practices, and expectations of its institutions (Ibid). Embedded in a social collectivity, they do what they see as appropriate for themselves in a specific type of situation.

With the logic of appropriateness, we are leaving the realm of individual “inwards” rationality proposed by rational choice theory, which does not account for people organizing in groups etc. The logic of appropriateness instead looks at the action of actors as influenced by the context in which they find themselves, e.g. how they fulfil obligations connected to a role (March & Olsen, 2004). Following rules of a role or identity is a relatively complicated cognitive process involving thoughtful, reasoning behaviour, but the processes of reasoning are not primarily connected to the anticipation of future consequences as they are in most contemporary conceptions of rationality (Ibid). Actors use criteria of similarity and congruence, rather than likelihood and value. To act appropriately is to proceed accordingly to the institutionalized practices of a collectivity, based on mutual, and often tacit, understandings of what is true, reasonable, natural, right, and good (Ibid).

This logic suggests that individuals working in health technology industry may adopt an understanding of what their goal at the firm is, even though this goal may be different from what their initial, personal goal was. E.g., if the goal of the firm above all is to make profit, this may be different from the individual’s idea of working in health tech for idealistic reasons. Or, it can be the other way around; a person may join the firm solely out of financial reasons, but adopts an emphatic view of their work. It is natural to think that a person’s motives changes in line with that of the firm after a process of socialization, that they adopt a logic of appropriateness to their work.

What logic of appropriateness does, is try to explain human behaviour as something dictated by so-called “institutionalized understandings” (March & Olsen, 2004) of what is right and

good. Healthcare, the practice of taking care of others, nursing them, showing empathy, and trying to improve their lives, is arguably something that could be considered a basically human trait, and not a rule or norm that an institution consciously professes or implements.

Finally, these two logics are not mutually exclusive. Goldman (2005) believes that the logic of appropriateness and the logic of expected consequences are perspectives, rather than theories. Where theories may be set against each other and their relative validity assessed by research, perspectives are not meant to be assessed in relation to each other (Goldman, 2005). Whereas theories are opposed to each other because we do not have sufficient evidence to decide the issue, perspectives are opposed because people have different outlooks, interests, and concerns (Ibid). Both perspectives will have some explanatory power, thereby ruling out a scenario of mutual exclusiveness, where one theory being right means the other is wrong. That being said, David Messick believes that the logic of appropriateness may have greater explanatory power in social dilemmas than expected utility models, like the rational choice theory (Messick, 1999). March (1994) argues that decisions are shaped by situational recognition, one's identity and the application of rules, and result from people answering the question, "What does a person like me do in a situation like this?". Rational choice, on the other hand, sees decisions as based on an evaluation of alternatives in terms of their consequences for preferences.

2.2.4 Weber's rationalism

Max Weber provides additional support to the notion that consequentiality and appropriateness are not mutually exclusive, and points out that there are different types of rationality. In order to study and compare empirical evidence, we can look to Weber's concept of ideal types to better understand how the empirical evidence can be connected to theory. An ideal type is a sort of mental construct, one which we can utilise to scrutinize and characterize systematically a concrete situation, a methodological tool to understand and analyse social reality (Ritzer & Goodman, 2003). The object of constructing ideal types is not to compare an empirical situation with the ideal type itself, but rather compare the empirical situations with one another.

The core of Weber's sociology was to explain why actors do what they do, so we have to try and place ourselves in the individual actors' position, to understand what was the purpose of one individual's action. This includes identifying what was the goal of the action, what the individual was trying to achieve, and finally how the individual considered the options that he or she had available for reaching the goal (Ritzer & Goodman, 2003; Schiefloe, 2003). Initially,

this seems to carry the conception that people always act rationally on the basis of a “rational consideration to realize a specific goal” (Schiefloe, 2003, p. 45), which corresponds to the logic of consequentiality discussed in chapter 2.2.2. In Weber’s framework though, the concept of rationality as understood in rational choice theory is not always relevant, because the outcome with the most expected utility may not always be the actors’ goal at the time. Weber’s describes in fact four action-types, each based on a form of rationality.

The first rationality is what Weber defines as *instrumental action*, the abovementioned conception that people act out of rational considerations to reach a specific goal. He describes an additional three types of rationality, on the notion that not all actions are based on this type of conscious, deliberate considerations. Humans can also act out of emotions or feelings, called *affectual action*, out of religious beliefs, rituals, or personal conviction, called *value-rational action*, or out of a force of habit and tradition, called *traditional action* (Schiefloe, 2003; Ritzer & Goodman, 2003). In Weber’s framework, it seems evident that both logic of consequentiality and logic of appropriateness are valid when explaining any given action.

The instrumental action and value-rational action is the most relevant for us, as they correspond to the logic of consequentiality and logic of appropriateness, respectively.

These additional types of rationality are useful, in the sense that we can construct a broader foundation on which we can analyse the findings, and see if value-rationality or instrumental rationality, or perhaps a different action-type rationality, can explain a certain finding. From there, we can take it one step further and ask, in total, do actors in healthcare innovation work there because of value-rational or instrumental considerations, or maybe both? Furthermore, one can analyse which rationality the Norwegian government wants to put emphasis on, when trying to motivate actors to participate in H2020. The findings of this thesis could also give a clue as to whether the government should focus on one or the other type of logic in this endeavour.

2.3. Subordinate research questions

Theory on behaviour is essential in order to understand the underlying question of this thesis: “why people do what they do”. That is why the logic of consequentiality, defined here by both Heath (1976) and Scott (2000), is central in formulating a framework in which we can categorize the different motives individuals have for their choices. The logic of consequentiality

claims that actors always choose the option which gives them the most satisfaction, and mainly act on threats of punishment and reward. Based on this logic, I pose the following sub-question:

Sub-question 1: Based on the logic of consequentiality, do actors in healthcare experience that self-enriching rewards, like money, or prestige, is the main motivation for working in healthcare?

Furthermore, we can look to the logic of appropriateness, which sees human actions as driven by rules of appropriate or exemplary behaviour. It is a perspective which postulates that actors mainly seek to fulfil the “obligations encapsulated in a role, an identity, a membership in a political community or group, and the ethos, practices and expectations of its institutions” (March & Olsen, 2004, p. 2). The perspective is thus based on socialization: individuals will aspire to fulfil what is expected of them in a job, or out of social desirability. This leads to the second sub-question:

Sub-question 2: Based on the logic of appropriateness, do actors in healthcare experience that value-based concepts, like idealism or altruism, is the main motivation for working in healthcare?

With these two logics, we take into account the pure rationality of working in a field which is growing and potentially quite lucrative, and the more “human” traits of compassion and empathy for the individuals whose life quality we may be able to improve. The final sub-question I want to ask concerns the role of the EU, and how motivations are stimulated by their policy and efforts. When discussing this question, we also have to take into account the role of the Norwegian government. Actors are free to do as they please in regards to H2020, but the government has clear ambitions and strongly promotes participation, almost rhetorically coercing actors to join H2020, c.f. Prime Minister Solberg’s statement (Kunnskapsdepartementet, 2014a). However, do actors really follow the governments’ encouragements, and if they don’t, how can the government change this? Should it provide actors with better benefits and reduce costs for applying, for example, or should it appeal to their sense of duty and emotions? The third sub-question is thus as follows:

Sub-question 3: How can the Norwegian government stimulate motivation to participate in Horizon 2020?

Answering these three subordinate research question should provide us a with a foundation for answering the main research question, and thus conclude the thesis.

2.4 Application of theory

The behavioural approach to social and political science analysis concentrates on a single, deceptively simple question: why do people do what they do? (Sanders, 2002). Although this thesis does try to understand the behaviour of actors in healthcare, I would say it slightly differs from the concept behaviouralism. What we are exploring are motivations, while behaviouralism emphasizes that observable behaviour should be the focus of analysis (Ibid). Of course, one could easily observe actors in healthcare on their decisions to either participate or abstain from Horizon 2020 projects, for instance, but I believe there would be a lack of depth into the personal reasons for their decisions. However, embedded in the behaviouralist notion of explanation is the idea of causality. Believable explanatory theories, like the ones utilised in this thesis, must be capable of receiving empirical support (Ibid), which is more or less what this thesis is trying to do through a qualitative case-study.

The two logics applied in this thesis are used in a fashion that provides us with assumptions on what motivates individuals to work in the healthcare technology industry. They tell us something about how actors behave, and why they do it. From there, I have constructed additional subordinate research questions on what we expect to find from the data collected through interviews. With the data collected and analysed, we can evaluate to what degree my assumptions are reflected in the respondents' answers. E.g., if a respondent claims that most private actors in Norwegian healthcare have a clear, economic incentive and motivation to their work, this would fit into the rational choice perspective of seeking gains. On the other hand, if a respondent states that she and everyone she knows chooses or wants to work in healthcare out of a desire to improve the healthcare system, or other altruistic motives, the logic of appropriateness may have more explanatory power. Furthermore, in the light of Weber's rationalism from chapter 2.2.4, we can see that the former example also corresponds with the instrumental action rationality, whilst the latter corresponds with his idea of value-rational action.

In the case of the logic of consequentiality, we can expect an actor to act in a purely rational way. Considering the pure, financial opportunities that the healthcare sector brings in, an actor would attempt to gain financial reward by involving him or herself in this field. Alternatively, he or she could act according to a pure logic of appropriateness, responding to the interpersonal and human aspect of healthcare, motivated by altruism and a drive to improve the quality of healthcare.

To give an example of innovation in healthcare that I believe adheres to the logic of appropriateness, one of the informants spoke of a colleague who worked as a doctor during the outbreak of the Ebola virus disease (EBV) in West-Africa in 2013. This doctor had witnessed a patient being transported by plane from West-Africa to Norway, and was appalled by the way the patient was being transported. He developed a new incubator for transportation, improving both the comfort and safety of the patient, and the safety of those around the patient (Drefvelin, 2017). As the informant says herself, “You don’t do this to make money, you do it because it’s important (...) because it is meaningful (...)”. We have an individual who sees a need, and applies his skills, expertise and knowledge to address it, because how can he not? It is the right thing to do, seen from the perspective of appropriateness.

On the other hand, one of the informants mentioned a scenario that most likely happens quite often, which could be an example of a rational choice. Information and communication technology (ICT) and digital solutions in healthcare is rapidly becoming the standard *modus operandi*, with the new Directorate for E-health established in 2016 as a prominent example (Direktoratet for e-helse, 2016). A software developer who works with ICT may discover that their new app, software or algorithms could be applied to functions in healthcare as well. It is not unimaginable that companies would implement a decision to move their products into a sector in strong growth, based simply on where they can generate income by selling their products. One can of course evaluate this on both micro and macro level, as in individuals and companies. However, the logics take account of individual decision making. They can better answer my research question, and if I were to investigate business decisions, I would have to stray into the field of economics, for instance.

Finally, Løkke and Sørensen point at some potential risks attached to attaining in-depth knowledge of theories prior to a research study. For instance, a researcher can be too emotionally attached to certain explanations and run the risk of ignoring otherwise conflicting information (Løkke & Sørensen, 2014). This can certainly pose a problem in the case of evaluating the chosen logics for this thesis, the logic of consequentiality and the logic of appropriateness. First of all, the critique held against the former is, e.g., that it does not take into account why people work or participate in groups that seem to benefit others more than themselves (Scott, 2000). It is difficult to argue against this, as we are all aware that people do, in fact, participate in different kinds of constellations, be it groups, organizations, institutions, etc. This legitimates the risks of the researcher “abandoning” the potential explanatory power

of the opposing or alternative theory. Nevertheless, Løkke and Sørensen claim that the risk of confirming existing ideas and beliefs do not seem to be an observed problem in case study research (Ibid). As I have explained throughout chapter 2, my intention is not the study of the theories themselves, but rather the assumptions that derive from them.

Chapter 3 Method

3.1 Multiple case study

The case study in this thesis is of a qualitative method, for several reasons. Firstly, we want to discover the personal feelings and opinions of the informants regarding the work that they do, and why they do it. I believe a case study with small-N, only three to five cases, is best suited for this goal. An in-depth interview can more easily uncover opinions and feelings that an informant may not be able to express clearly through a large-N survey. Secondly, whereas quantitative comparative research is strongly analytic, and abstracts particular phenomena from their context in order to compare them across cases, qualitative studies look at the phenomena within their context, and look at the cases as “wholes” (Hopkin, 2002). Third, there would be a tremendous amount of work involved if a large-N survey was to be utilized. A more systemized mapping of relevant actors, e.g. by sector, size, participation in EU-projects or not, and experience, would be necessary, along with proper distribution of the survey to the relevant actors. As Robert Yin points out, case study research used to be a massively time consuming method as well, but depending on the composition of the study, one can conduct a valid and high-quality case study even without leaving the internet or telephone (Yin, 2014).

Third, to gain valuable insight into the cases, a certain degree of context is necessary. A case study thus seems appropriate for achieving the goals of the thesis, as it attempts to look at the surrounding conditions that may influence the informants. The point of this is that it makes comparison of cases easier – in order to generalize, we need to be able to find out what makes a certain case unique or if it has similarities to the remaining cases (Punch, 2005). Lastly, when investigating a particular theoretical statement, we cannot consider only the statements or observed cases that provide anecdotal support for the theoretical claims that are being made, we have to consider all the cases (Sanders, 2002). In the case of this thesis’ data collection method of interviews, all the relevant passages and text segments, that are encompassed by the theoretical statement that is being evaluated (Ibid).

Løkke and Sørensen (2014) make a case for case studies, and argue that it can be a valuable tool for testing theories. It can be difficult to limit a case study, to see where it starts and where it ends, but the overall advantage of a case study is that you can close in on a real-life situation (Ibid). Furthermore, the method of case study is relevant the greater the need is for an extensive and in-depth description of some social phenomenon, for instance behaviour or motivations, as

this thesis is studying (Yin, 2014). This allows us to test the case against one or several theories, or in this case, “logics”, which focus on these phenomena, and may provide one logic with more explanatory power than the other. As David Sanders writes, “(...) the ultimate test of a good theory is still whether or not it is consistent with observation – with the available empirical evidence” (Sanders, 2002, p. 54). Using multiple theories in our research design helps us examine a case from multiple angles, and works as a form of triangulation (Løkke & Sørensen, 2014).

This type of explanatory study examines how a situation or event may be explained by one or more theories, of which the theories are not mutually exclusive (Løkke & Sørensen, 2014). Furthermore, when a theory is tested, we draw logical conclusions and predictions and compare them to the observations made. The more often an assumption is confirmed, we can have more faith in that the theory actually reflects reality (Ibid). I have provided two examples of how this may occur in chapter 2.4.: Actors can act out of a pure, rational sense, with decisions made on the foundation of complete information on what is the most rewarding option; or, they can act out of idealism or altruism, in line with their personal values for instance. The scope of this paper allows for only a limited number of observations or cases, and can thus undermine the explanatory strength of the theories applied. By using more than one theory and comparing several complementing theories, we can achieve triangulation and research how differing assumptions affect findings (Ibid). Using only two theories is naturally a limit on how extensive and precise the triangulation is, but I believe I’ve redeemed this potential problem by also including Weber’s rationalism, thus taking into account alternative explanations that do not necessarily fit into the context of the logic of consequentiality or appropriateness.

3.2 Interview as method

A semi-structured interview is regarded as the most sensible data collection method for this thesis. For a qualitative research interview to be successful, it is important to create an atmosphere of trust between the interviewer and informant. The goal is mainly to create a situation where a relatively free conversation revolves around issues that the researcher has decided in advance (Tjora, 2012). The researcher must always try to interpret what the informant says, ask relevant follow up questions and prompt the informant to elaborate on issues. To achieve this, it is vital to have a good understanding of the phenomenon that one wishes to investigate, both theoretically and conceptually, as well as insight into the informants’ situation and a thorough preparation of the interview itself (Thagaard, 2003). Tjora writes that,

“it is inescapable, that in these kinds of interviews, we focus solely on issues that are connected to the informants’ subjectivity, or the informant as subject” (Tjora, 2012, p. 105). When asking informants of their perception of a phenomenon, as I do in this thesis, subjectivity is naturally something that must be taken into account. The interviews do not focus only on the informants themselves, but I used them to understand connections beyond them as individuals.

My informants were, to some extent, experts in their fields, so I want to highlight some of the aspects of so-called elite interviews. Such interviews can provide an account by a major player in an issue that is of importance to the researcher’s work. I believe this to be the case with at least two of my informants, informant I2 and I4, as they are both the top leaders at their respective places of work. I would like to add that not all the informants are employed in this type of positions, and not “elites” as such, but they can still be regarded as elites because of their expertise. Because of this, elite interviews can generate data of a high level of validity and reliability, and is a cost-effective vehicle for acquiring unique data on complex issues (Beamer, 2002). Also, when trying to measure somewhat abstract concepts, which in this case would be motivations, elite interviews can yield some valid responses (Ibid). Although subjectivity is usually a potential issue in interviews, I want my interviews to carry some subjectivity, as I am exploring people’s perception of what I am researching.

Finally, we must take into account the aspect of social desirability in interviews, especially when exploring rather sensitive issues like healthcare. Social desirability reflects the tendency on behalf of the subject to deny socially undesirable traits and to claim socially desirable ones, and the tendency to say things which place the speaker in favourable light (Nederhof, 1985, p. 264). Social desirability can be regarded as a distortion of responses in a socially desirable direction, and can be quite difficult to control and detect (Ibid). One of the possible methods of preventing this problem, is the use of so-called “proxy subjects” (Ibid, p. 274). Proxy subjects may yield reliable information about target persons, whenever behaviour is concerned. This is to some extent what we are looking for, as my informants provide information on the sector in general, and not specific target persons. Also, behaviour itself is not the main focus point for this thesis, although it is of course a strong indicator of the motives that make the foundation for an individual’s decisions. Yet, such methods of diminishing social desirability bias do not excel completely, and its effectiveness must be determined empirically from case to case (Ibid). I will return to this in chapter 3.7., on the issue of analysing interviews.

3.2.1 Conducting the interviews

All of the informants, except one, were key note speakers at a healthcare technology conference in March 2017. They were interviewed at different times during the day of the conference, as I had to adapt to when they were available. The interviews took place at different locations at the conference venue, depending on the level of activity in the area around us. I found a few, relatively quiet locations, removing the potential problem of background noise on the audio files. This worked well, to a certain extent. Three of the interviews were interrupted for a few seconds, as colleagues of them came over to talk to them. The informants acted all very professionally however, and kindly dismissed their colleagues before returning to the interview. The last informant was interviewed via Skype some days before the conference.

The interviews were recorded using a smartphone, and later stored as audio files on my personal computer. Thagaard (2003) mentions that using a recorder can give the interview setting a formal touch, making it difficult to have a truthful, relaxed and honest interview setting. I did not perceive this as a problem, as the informants all agreed to me recording their answers and did not seem bothered by it. I believe the use of a smartphone, rather than a dictaphone, is actually more suitable in this situation, because most people are used to being around smartphones. Pressing play on the recording function and turning the screen off thus made the phone “invisible”, and did not influence the interview setting in any way. The potential problem of the audio file being interrupted by a phone call, for instance, was solved by turning off the mobile network on the phone, making it impossible to send or receive phone calls or text messages.

The audio files were transcribed immediately after, and analysed by looking for themes and patterns. I analysed them by inserting the transcription in a matrix (see table 2, p. 31), clearly separating questions and answers, and marked each box of text with a code to indicate who said it. These matrixes were then uploaded to NVivo, which is a qualitative data analysis software. This program allowed me to highlight different parts of the text, and assign a node to each part, thus grouping together text-segments that were part of the same node, or theme.

The informants have all been designated with a code in the analysis chapter to ensure anonymity. The codes were given based on the chronology of when they were interviewed, as number 1, 2, and so forth.

41	B	Yes, it makes, it makes a lot of sense yeah. And a very fascinating example. I can imagine, asking for permission, it would have been a lot of...
42	I3	Actually, it would have never happened. Because the next day, the hospital managers found out, that my students were running around halls asking questions, and they sent us this enormous legal document saying, you can't do that. Impossible. So, then we stopped.
43	B	But no action taken?
44	I3	Exactly. And, again, this is really important. Be incredibly smart, ethical, and thoughtful about the process. We're not asking people to go out there and ask questions and share it online and be stupid about it, no. So again, certain rules are still really, really important.

Table 2: Excerpt from interview matrix.

3.3 Operationalization

When trying to answer the research question, we need a way to “measure” how much the EU matters for the actors working in healthcare technology innovation in Norway. In order to do this, it is necessary to have an idea of what drives the relevant actors. The measurement is done by analysing the data collected through interviews with relevant informants, or cases. The data consist of the informants’ answers on many topics. Simple things like: Do you work in private or public sector? How long have you been in your job? Or more demanding questions like: What is your experience with the EU and Horizon 2020? How does that matter to your work? Does motivates you to “do what you do? A more thorough review of the questions can be found in chapter 3.8.

We expect the actors’ motives to fit into the context of the logics chosen, as basis for my sub-questions, the logic of consequentiality and the logic of appropriateness. Whereas the first takes account of peoples motives as driven by utilization maximization, the latter predicts institutional norms and socialization as being the motivating factor. When evaluating the respondents’ answers, one interesting unit of measurement, so to speak, is the amount of emphasis that informants put on their answers. If a respondent strongly and confidently believes that a logic of consequentiality, for instance, is the dominant mind set among healthcare actors, it will obviously influence the thesis’ findings. If all of the informants respond in the same way, then the conclusion should be quite obvious. As it turned out, the informants seemed more eager

when giving answers that they more clearly emphasized. The informants believed strongly in what they were saying, and thus talked about it much more, and in a more convinced fashion. Meanwhile, the opposing assumptions, although they were acknowledged, were met with more indignation and scepticism.

The data collected from interviews with relevant informants may or may not provide one or both of the logics with evidence, thereby either confirming or refuting them. Furthermore, we should also be able to attain information on how the Norwegian government influences motivations, as the informants talk about the struggles they face in the innovation process. As mentioned, for instance in chapter 2.2.4., it will probably be difficult to side conclusively with only one logic. Although they start at different ends in an attempt to explain certain human behaviour, they are not mutually exclusive: if one of the theories is proven to answer the research question, the opposite theory might also answer the question, just from a different perspective, or in a complementary fashion.

3.4 Case selection

The cases analysed in this thesis are individuals, and these individuals are the primary unit of analysis, referred to as actors, informants, individuals, or cases from the outset and throughout. Individuals have been chosen as the most sensible unit of analysis for answering the research question, for a couple of reasons. Firstly, the aim is to find out why actors do what they do, and to what degree the EU has any influence on their motivations. It is natural to expect that human emotions and feelings may play an important part in this. Individuals are chosen as cases because they are more able to express their feelings, can talk on behalf of themselves and state their general perception of their colleagues' feelings. It is reasonable to expect that rational, normally socialized people can reflect on their work and motivations for it, which is what we want to know. Secondly, the informants were chosen partially based on their position in their respective firm or institution. With informants that occupy relatively high positions at their place of work, we can expect them to have a broader overview of the themes that are being discussed. We want to know the personal perceptions of the informants, and being aware of their positions can also potentially aid me in analysing their answers. In some cases, the informants' motivations and answers could be influenced by their company's official line or their policies. Having this in mind, I can be more critical of their answers and attempt to gauge whether or not the informant is sincere in his or her narratives.

As mentioned, this type of data collection through use of interviews seems the most logical method in this thesis, as it allows us to gain in-depth knowledge on the phenomena under scrutiny. The selection of informants was to a certain degree random, as there was no extensive screening process of the informants. Only a few criteria were applied when searching for informants, which was mainly their position in the firm they are working for, and if they worked in the public or private sector. As already mentioned in chapter 3.2.1., Most of the informants were key note speakers at a conference on healthcare technology during the spring of 2017, and it was possible to get an overview of the informant's field of interest and expertise through the information the facilitators made available on their conference website. This made it very easy to get a quick overview on potential informants, as key note speakers on such conferences usually have extensive knowledge on the related issue. Also, one of the advantages of being able to select potential informants from this list, was that I could identify which informants were less relevant than others. This should bring further reliability to the informants, as they were chosen among a wide range of experts in healthcare. However, one of the problems regarding this method of locating informants can be that the conference facilitators simply did not have the correct information on the informants. To redeem this potential problem, background checks were done to make sure that the informants were who they in fact appeared to be, as stated by the conference facilitators.

Of a total of five informants, two worked in the public sector and one worked in the private sector. The remaining two had a more blurred relationship to these sectors, and worked either for both parts, or were working in a private non-profit company, which was co-owned by members and had funding from the government. The last company was quite interesting, being a so-called business cluster, consisting of over 200 firms, businesses, and institutions. This informant thus had an exceptional insight into the workings of Norwegian innovators in healthcare. Furthermore, the informants in the public sector worked for large institutions, and had worked with healthcare for most of their careers. The same goes for the one in the private sector and one of the informants in the middle ground. The last informant had not worked with healthcare, but he was an expert on the processes of innovation, from idea conception to prototyping. All of them had extensive knowledge in their fields and quite long careers behind them, with some nearing the end of their professional working life. With such a composition of informants, a lot of ground was covered in terms of expertise and knowledge, experience with the EU and the different sectors, and a large network, which they could draw on and cases to explain their opinions and thoughts.

3.5 Data selection and collection

In this thesis, we are interested in people's thoughts and emotions, how they themselves perceive the environment in which they work, and in which they make decisions about their future careers. When we reduce these things to sounds, words or pictures, the result is qualitative data (Bernard & Ryan, 2010). Data is created by chunking experience in recordable units, and this experience is gathered and produced on purpose through interviewing people and transcribing their words. As explained in chapter 3.2., I have chosen semi-structured interviews, for several reasons. In the semi-structured interview, all the informants were asked a set of similar questions. Because we want to make some comparisons, e.g. between public and private sector in healthcare, similar information from the respondents is necessary.

Since the semi structured interview is quite flexible, I could modify the order and details of topics as I went along. This is very useful when the questions require some reflection, and it is not a given what the respondent will answer. As Bernard and Ryan (2010, p. 29) write, this "cedes some control to the respondent over how the interview goes, but, because respondents are asked more or less the same questions, this makes possible comparisons across interviews". Sometimes it also calls for some improvisation for the researcher. In this case, certain informants tended to digress from the initial question, but were still within the confines of the topic. Surprisingly, this led to the interesting problem of the informants sometimes answering the questions before they were even asked, and some slight improvisation regarding the order of questions was necessary. This is something I would consider a strength, however, because it creates a more organic answer by allowing the informant to reflect freely. This was especially well reflected by the way informants drew on experience and knowledge of examples that underlined their points. One of the informants also went from talking about the needs of the private sector and the fight over competitiveness, to how the doctors' associations prevent doctors from attending conferences where there would be a private supplier of healthcare technology because of problems related to vested interests. Thus, she unintentionally highlighted one of the main issues in Norwegian healthcare technology innovation, that practitioners do not implement or utilize the new solutions that are made available. I will return to this problem in chapter 4.5.3.

3.6 Limitations and Generalizability

Finally, it is important to keep in mind that the second part of my research question concerns how the EU's innovation policies stimulate actors in Norwegian healthcare technology. The informants alone do not represent the entire industry in Norway, thus giving us only a small window to peer into this massive sector. This creates a problem of generalizability. Yin (2014) writes that a case study is generalizable to theoretical propositions, and not populations. He claims that case studies can lead to analytical generalizations, based on corroborating, modifying, rejecting or otherwise advancing theoretical concepts applied in the design of the research study (Yin, 2014). A search for simple causalities in case studies with a high degree of complexity is almost hopeless (Løkke & Sørensen, 2014), but this thesis is neither extensive enough nor probing deep enough to create this problem. The question this thesis seeks to answer is rather large and overarching for most actors, and can potentially involve a lot of effort, time and money. It is therefore a question of major importance for many actors. In addition, with five interviewees with different backgrounds and in different parts, such as private and public sector, of the industry, I believe that some generalizability other than simple theoretical application, is possible.

3.6.1 Missing data

When doing interviews like these, one also has to take into account the potential of missing data. Data can be missed for example when people are unwilling to answer a question, but usually it comes from the researchers' failure to ask a question in the first place, failure to probe for more details or clarification, or to record answers faithfully (Bernard & Ryan, 2010). What people think but do not say is considered missing data, underscoring the importance of being an attentive listener and probing for more information when an answer is unsatisfactory or when you believe the informant could say more about an issue (Ibid). Furthermore, audio transcripts can eliminate certain kinds of data from the record. For example, you lose body language, facial expressions, gesticulations, and other things which can provide context (Ibid). In this thesis, I have done my best to avoid these potential missing data traps. For instance, I have included laughter in the transcripts, because it is an important context marker. In one of the interviews, laughter enhanced the informant's sarcasm towards and frustration against the obstacles that she met in her line of work. This can provide us with important information on this person's perception of the issues she is dealing with, information that would not be available if the

transcript was wiped clean of such linguistic instruments and only contained the concrete, spoken words themselves.

3.7 Method of analysis

In the analysis, we are interested in people's thoughts and emotions, and the environmental conditions in which they think and feel. It is quite important that the informants answer freely, and reflect around the questions they are asked. I wanted to avoid letting their knowledge of what I really wanted to know to influence or alter their answers. Although they would have answered the questions they were asked, one cannot assume that they wouldn't take it upon themselves to be "better informants" and subconsciously alter their answers to fit my agenda better, elevating themselves as good interview subjects and thereby distorting the validity of their answers. It may sound like a trivial thing, but as Bernard and Ryan write: "Interviews are social encounters, and people manipulate these encounters to whatever they think is their advantage. Expect people to overreport socially desirable behaviour, and to underreport socially undesirable behaviour" (Bernard & Ryan, 2010, p. 37). For this reason, the interview subjects were not told the specific research question of the thesis, only the main themes, being Norwegian healthcare, Horizon 2020, and so forth. I had already told the informants these main topics of the thesis when requesting the interview, but no more information was disclosed during the interview itself.

Naturally, the answers themselves must be subjected to the same expectations that Bernard and Ryan mention in the previous paragraph. Because of the nature of healthcare, there is to a large degree a human factor that must be considered, because people often know what "the right thing to do" is, to take care of others and show empathy for fellow human beings. When they are asked the question "what drives you", or "what motivates you to work in healthcare", they will answer "because I want to help people" because it is *the right thing to do*. This is a problem it is quite difficult to work oneself around, and certainly affects the generalizability of the thesis, c.f. the problem of social desirability, as explained in chapter 3.2. However, when showing to examples or anecdotes that highlight issues, the informants were open about the health sector being a sector in strong growth, and where there is potential to make a lot of money. They admitted that though this agenda may certainly be fitting for some, it did not fit their general perception.

Furthermore, the field of healthcare is not like engineering, where the numbers is the only thing that matters. In healthcare, people are humans and not numbers. Emotions and feelings can have a strong impact on an informant's view on the matter, influencing their opinions and their answers. This is what makes this field of study unique. Although the government has grandiosely proclaimed that it wants Norway to become one the greatest innovators in Europe, the "boots on the ground", the individuals that work in the industry, may have a more grounded view of why healthcare is important and why they want to work in this sector.

The method used for analysing the interviews, is a cutting and sorting-method. It is a way to process text that identifies quotes and expressions that seem somehow important, reading through the transcripts, and pulling out all segments of text associated with the questions (Bernard & Ryan, 2010). For instance, one of the informants said the following: *"What they say, those that now have become researchers in that national centre, they say that EU-projects really is just a lot of bureaucracy, there's loads of reporting and a lot of travelling and then you have different planets that you work on so it's almost difficult to understand each other when you are sitting in meetings"*. We can compress this information into a simpler sentence, for example: "(some people say) EU-projects is just a lot of bureaucracy, reporting and travelling, and it is difficult to understand each other in meetings". The advantage of this method is that you can cut out all unnecessary text where the informants digress, where there is informal or irrelevant talk. The disadvantage is that a lot of this unnecessary text provides context, for example when the informant provides examples or anecdotes that highlight issues. In these cases, the text is included where it seems logical.

Another advantage of cutting and sorting is that you can group text segments by themes³. One can decide what themes are salient and related to each other, and divide by major themes, sub-themes or so-called meta-themes (Bernard & Ryan, 2010). It is also useful for both lengthy narratives and shorter, less complex texts, of which we find both in the interview transcripts. Sometimes the informants have long and in-depth answers, with a lot of information, and at other times it can be a simple sentence or just a few words. One does not need any particular skills to use this method either. It is not computationally intensive or requires substantial

³ See appendix 2 for table with all themes

training, and the technique is not too labour intensive (Ibid). This makes the cutting and sorting-method very versatile.

3.8 Questions

As mentioned chapter 3.2. and 3.5., the actual interviews did not follow the interview guide and line of questioning as rigorously as perhaps imagined. Digression and reflection was allowed, skewing the chronology of questions, but they were nonetheless answered in a satisfactory way. The questions for gathering data from informants were constructed in order to draw information on subjective motivations and drives for working in healthcare, and to measure whether consequentiality or appropriateness was the underlying, behavioural logic. I have chosen to exemplify this by discussing a couple of the questions⁴.

The first half of the questionnaire are general questions, questions about the individual and their employer, either firm, institution, or organization. The first three questions look like this, for instance:

1. What is your role, and how long have you been working with this?
2. Do you work in public or private sector?
3. Do you work mainly domestically or internationally?
 - a. Do you participate or cooperate in projects, either domestically or internationally?

It may not seem as the most important questions, but they contribute with necessary information. Firstly, it is common to start off with a few warm-up questions, to get the informant going. Simple questions about facts, easy to answer, and without the need of including feelings or difficult considerations (Tjora, 2012). Secondly, question 2 provides us with information about the informant's point of view, and whether their subjectivity is based in a background from public or private sector. Actors in the two sectors have a different basis on which they can base their operation, as firms in private sector are much more dependent on regular income, whilst public actors usually are funded by the government. Successful, private firms can also be bought by other competing firms, and leave those who started the firm with a considerable amount of money. A good example of this is the former Norwegian health technology company

⁴ See appendix for full interview guide

Inovio, which was sold to an American company for a sum of NOK60 million, leaving the founder with a considerable sum⁵. Question 3 maps whether the respondent concentrates their work domestically or internationally. With the funding opportunities made available by H2020, especially the private sector could be expected to make use of these opportunities. These two questions may seem like regular, background information collecting questions, and they are. However, this information may give us a clue to why a respondent would answer accordingly on what is important for them in their work – and thus directly influence the explanatory power of either of the logics.

I also want to discuss one of the questions from the more loosely structured reflection-part of the interview guide:

7. In many areas of business, making profit is the usual motivation for most firms. Healthcare and welfare is one of the strongest areas of growth the last years.
 - a. In the case of firms or institutions in healthcare technology, what is your perception of this issue?
 - b. In your case, as a private/public actor, how important is funding?
 - c. Would you do what you do if it wasn't profitable or didn't receive funds from the state/H2020?
 - i. So, the funding from ... is important/not important?

In this case, I attempt to make the informant reflect about perhaps the main issue that typify the growth in healthcare, namely funding. Perceptions on the necessity of funding is quite important, again, as it is, in a sense, the main component of logic of consequentiality (Heath, 1976), as discussed in chapter 2.2.2. Question 7a is a more general question, where the informants reflect on the sector as a whole, speaking of experience and their impressions of the influence that the growth has on the individuals working on the healthcare sector. 7b is similar, and focuses on the individual her/himself. 7c tries to problematize their answers, by asking what decisions they would make regarding working in healthcare, if the sector wasn't properly

⁵ It proved very difficult to track down reliable sources on this. It is an example mentioned by one of the informants, who knew the founder of the company personally, and I have no reason not to believe her. From what I have gathered, the investment company Selvaag Invest, who owned 15% of Inovio, released a press statement in March 2005, confirming that the company Inovio had been sold to American company Genetronics for a sum of USD10 million. The press release is available at Radionordkapp (2005) and news.cision.com (2005).

funded, either by the government or private funding. If an informant would choose to apply their skills and expertise in a completely different sector than healthcare, on the basis of lacking financially rewarding prospects, it would indicate a logic of consequentialism. On the other hand, if the person concerned chooses to stay in healthcare despite not making the same amount of money, but because of a desire to help people, contribute to improved technology and methods etc., a logic of appropriateness would be more likely.

Chapter 4 Analysis

4.1 Themes

As mentioned in the previous chapter, text segments are grouped by themes⁶. During the interview, different sub-topics of the main topic were discussed, and the informants usually covered more sub-topics than what the questions asked for. This creates a more holistic picture, with the informant drawing on his/her own experience and different views to answer the question. These anecdotal passages can be analysed themselves, by identifying and grouping them into themes. Text segments from all the interviews have been coded with these themes, and then grouped together to make it easier to compare, as explained in chapter 3.6. The most relevant themes are presented here, with all the answers from every interview coded to that theme. By going through the themes systematically, we can compare the answers and analyse their content and meaning, and together, this should provide us with enough information to answer the subordinate research questions, and thereby the main research question. Each theme will have a short explanation on why it is relevant, and what the questions within that theme were.

Since all the informants were asked more or less the same questions, albeit in somewhat unchronological order as the logical and natural progression differed from informant to informant, the interviews have been coded similarly. In other words, similar text segments have been designated with the same theme. These themes are as follows: Benefits of EU projects, EU project participation, Examples of successful innovation, General (with the subthemes Daily work, Private sector, Background, Public sector, and Other), General problems/Non-EU, Innovation application, Motivations, Problems with EU. Of these, not all are relevant for discussion in this thesis. For example, the General-category can be drawn upon when some explanation of background is necessary, or when their daily work is relevant. The most important themes are Benefits of EU projects, General problems/Non-EU, Problems with EU and Motivations. By looking closer at these themes, and cross-checking the informant's answers, a pattern should emerge and we can make some empirically backed assumptions.

⁶ See appendix 2 for table with all themes.

It should be noted that the interview guide did not ask questions directly regarding the themes. For instance, answers grouped under the Benefits of EU projects-theme were given in reply to the question: “Do you participate in any international projects?”⁷. Most of the time, the informants wouldn’t just answer yes or no, but also elaborate on what the project was, and how it worked out. As mentioned in both chapter 3.5. and 3.7., in this semi-structured interview, the informants were allowed to digress and usually ended up giving more information than the question asked for. Because of this, it will be somewhat difficult to track a consistent “question-answer” line in this analysis, as many of the answers didn’t receive a concrete question, or a question about something else entirely. Also, some of the interviews took on a form of dialogue between the researcher and the informants. The questions had a more lenient form, and were formulated more as a statement or sentence that kind of trailed off, where the informant picked up the topic and continued the train of thought.

4.2 Responses

In the following, I will present and discuss the themes and the answers that the informants have provided me with. As mentioned, there are four main themes that I deem necessary to analyse in-depth. I will mainly look at the answers that actually help highlight and answer the main research question, however, the remaining themes are still useful to draw upon for additional, contextual information.

4.2.1 Benefits of EU projects

This theme highlights the many benefits that actors experience by participating in international projects under Horizon 2020. Without all the positive sides of working with border crossing projects, sharing knowledge, and acquiring funding for excellent research, the research program would arguably lose its premier utility, as it is essential that participants see a clear benefit of engaging in international cooperation.

The informants mentioned several different benefits of EU projects. One of the reoccurring aspects of this was cooperation across borders and with different actors. Several nuances of this were highlighted. For instance, informant 1 (I1) pointed out the educational value of getting to know other countries’ experiences, to gain familiarity to them and take advantage of it.

⁷ See appendix for full interview guide

Furthermore, participating in projects with actors from different countries could open up new directions: “The international network is very valuable, there is no doubt. (...) we had a lot of international conferences that presented us with new paths (...).” International cooperation does not just hold an educational value, but can also present new business opportunities through sharing of knowledge. As mentioned in chapter 1.4.3., this is an obvious characteristic of H2020, bridging different sciences and sectors. The aspect of cooperation is also an important part of the overall focus on motivation, something we will come back to in chapter 4.2.4.

Informant 2 (I2) agrees with I1 on the idea of the added values of international projects:

“So, this is the basis for why EU has put health very high on the agenda, that Horizon 2020 have such large programs within the health area. It is about the large societal challenges that need to be solved. At the same time one can see that you can create new jobs, when you solve them. So, it is not only about, it is not just solving the problems, but it is also about creating new business and new jobs.”

We can already detect the underlying rationality of mounting an effort like Horizon 2020, and the reasons for why the Norwegian government wants domestic actors to actively engage in the research program. By stimulating to solve some of the biggest issues we are currently facing, growth is stimulated at the same time by creating new jobs. With Europe hit especially hard by high rates of unemployment after the last economic crisis (Eurostat, 2017), a growing healthcare sector could provide much needed jobs. I believe this could be explained by either logic: a desire to promote growth would indicate a consequential rationality; and a desire to help the population acquiring employment and supporting themselves indicates a logic of appropriateness. This also underlines my previous point from chapter 2.2.3., that the logics are not mutually exclusive (Goldmann, 2005).

Working in a major business cluster, helping businesses succeed in their applications for EU funding, this informant also pointed out a bonus added value of actually succeeding: when a business receives millions of euros in funding from the EU, this starting capital can be an incentive for private investors to invest in these companies. Creating a “snowball effect” like this can help Norwegian companies to succeed in international markets, stimulating their product development through adequate funding. Furthermore, the informant pointed out that you can use the application process to actually build the strategy for what you are going to develop and how you are going to develop the product. It is a win-win, because in parallel with

writing an application you create the strategy for how you are going to do it. In this case, the EU is not just a funder, but an actual business creator – aiding businesses in improving their competitiveness and ultimately, their products or services.

We can also consider this in the light of cooperation – a successful company can be a pioneer for other start-ups, providing them with experience and insight, and helping them succeed themselves. In the long term, this could also be a furthering of the snowball effect.

Informant 5 (I5) also agrees with the benefits of cooperating in projects, and perhaps imbues it with even more importance:

“There is always a value in collaborating with others. None of the innovation projects we run, we run without having with us other hospitals or communes, or technology suppliers, so there is no doubt that working with a European project is interesting, because you get impulses from other countries.”

He claims that they never run projects without collaborating with others, underscoring actors’ mindset in their work. The contributions of others are more or less essential, as there would be no projects without them. Co-operation is not something the logic of consequentiality is particularly good at explaining (Heath, 1976), indicating a strong bias towards appropriateness. But what about a situation where the actor chooses to cooperate because it is the alternative that gives the obviously best economic gain? As discussed in chapter 2, theory suggest that this kind of cooperation is a result of a careful consideration that cooperation yields the highest profit, and as such motivated by a logic of appropriateness, rather than consequentiality.

He also points to another added benefit of working with EU-projects, as it gives more status and attention. Remembering the previous paragraph, that companies can land private funding due to contributions from the EU, prestige and attention can probably aid in achieving the same effect. However, the notion of prestige is more of a pleasant side effect. The most important factor is that the project or solution you are working on is interesting for the hospital, followed by potential learning effects from cooperation across borders.

Lastly, I5 talked about the possibilities for personal growth not just in the sense of education and sharing of knowledge:

“It is clear that travelling, to be able to see the health services or the needs in other countries, does something with your own development and understanding, so I think that there is an aspect attached to this. You have the same if you

cooperate in a Norwegian project across competences. That we now do projects along with technologists, some of the benefit for myself is that I learn a lot of stuff I didn't know, and that it is stimulating and fun. And I think that EU-projects also is a supplement to this. "

One of the key words here I believe is "fun". Working in international projects can be challenging and very beneficial for a multitude of reasons, which would usually be described as "professional" reasons, so to speak, e.g. for learning purposes and financial reasons. It is also something that the actors find stimulating and entertaining, most likely working as a catalyst for wanting to participate in future projects. It can also make the day to day work more engaging, and provide people with more motivation to keep working in healthcare. Personal reasons like this do not completely correspond with either of the logics, and it's difficult to paint the concept of fun in the light of rationality. Nonetheless, enjoying your work in this sense may well be very rewarding, and provide actors with a lot of satisfaction in their job. In this sense, consciously choosing the most favourable option and what you want to do, can be considered using a logic of consequentiality. However, I believe this type of motivation could be better described as an affectual action rationality (Schieffloe, 2003), as described in chapter 2.2.4., or at least inhabiting a large element of this. This goes to show that not all forms of motivation immediately fit into the context of the two logics.

4.2.2 Problems with EU projects

This theme looks at the issues that many actors attach to EU project participation. I believe it is an interesting topic to analyse, as it provides us with some insight into potential roadblocks that can discourage participation. However, it must be taken into account that these roadblocks are there for a reason. As we saw from the chapter 1.4.2. on Horizon 2020, applications are held to high standards in order to separate the good from the excellent, in order to stimulate competitiveness and make sure that funds are given to projects that actually has an impact on the socio-economic issues that they address.

Only three of the informants were able to answer questions regarding problems related to participation in international projects, as the two remaining had very limited experience in this regard. Also, the answers were not very extensive, which tells me that there is not generally a high level of exasperation, so to speak, among health technology innovators on the complexity of Horizon 2020 applications. Some of the informants seemed somewhat irked over the level

of details and rigidity of the application process, but not completely discouraged, and they also saw the use and necessity of the demands that the application process asked for.

Informant 1 shared a story I believe many applicants recognize:

“It was among the first things I experienced when I started at, what was at the time called Department of Tele Medicine, we spent an entire year forming a huge EU-application along with six-seven partners, large firms both public and private partners, and all of Tromsø almost put their faith in “now we’re going to land an enormous EU-project”. And it stranded on one typo in a summary or something, like we hadn’t followed the rules. On one page. And we spent so much time.”

Informant 2 agreed, stating “if the financial statements are not correct down to the penny, the EU is not satisfied”. Nonetheless, actors keep engaging in international cooperation, and the same informant points out that projects have been exposed to test-runs in the north of Norway and in Finland, among others, and have been very successful. However, there are other barriers along with EU strictness. Such projects offer a large amount of bureaucracy and reporting, a great deal of travelling and cultural barriers – for example work ethic, language barriers, and different understandings of what you are trying to achieve. I1 also pointed to the issue of there often not being a business plan behind the projects, which departs from what I2 told us in the previous theme-section. I would like to point out, though, that these two informants speak from a different background. I1 has worked in public healthcare for a long time, and has not been involved in Horizon 2020 projects as much. I2 on the other side, is very involved in the private sector, helping other firms and businesses to succeed with H2020 applications. The latter seemed to have a more forward leaning attitude towards internationalization, is more involved and has more insight into the business-side of running a firm. As we saw in the former theme-section, EU-funding for private companies can be essential for their product development, and keep them from going under. This is usually not, at least not to the same extent, an issue in the public sector. I believe that it creates a bigger incentive for private companies to become more competitive, and formulate a business plan around an application. The application process is no longer just an application process, but also a strategy process.

Informant 5 pointed at the complexity of working in Horizon 2020, and the troubles of getting to the point of actually applying:

“I wouldn’t have been able to initiate, or come up with the initiative on my own. First you need to build large, national consortiums. Then you need to build international ones, then you need to navigate through, find the right program, and understand the call for applications. If I were to apply for an EU project and it would have been based in our needs or things we wanted to look at, we would have to go bankrupt. I would have to learn how to do it [applying for EU projects]”

Including the complexity and rigidity of applying for H2020 projects, it is also clearly a process which requires a unique kind of knowledge. I2 backs I5 statements, and says that “it is almost an entire branch of knowledge in itself, to understand how you build an application and implement that work in a good and correct way, and administrating it. You have to (...) build up your knowledge on it”.

4.2.3 General problems

Although there are a lot of issues regarding EU projects, there are also domestic problems that can be a hindrance for health technology actors. This is especially relevant when discussing the concept of innovation as defined by the Norwegian government in chapter 2.2.1.: “A *new invention or idea does not become innovation before it is put to practical use*”. As we saw from the previous chapters, mainly chapter 1.1. and 1.4.4., there can be no doubt about the level of ambitions that the government has put down. However, these ambitions face problems on many levels. From the previous theme-section, we saw that complexity, rigidity, difficult learning processes, differences in culture between partners etc. can contribute to challenging circumstances. Furthermore, actors also run into domestic problems.

Informant 1 mentioned several aspects of this. For instance, Norway used to be ahead in the development of healthcare technology, but has started to lag. She also pointed to the constant struggle for more financial means, to fund different projects or researchers. The most essential point, however, was the lack of ability to utilize already existing technology: “Today we use Skype and we are on facetime⁸, and the patients do to. So, this is just nonsense, that we can’t use the technology to a much larger degree to improve the efficiency of our health services”. The informant exemplifies this by describing scenarios where patients meet an uncoordinated

⁸ Software created by Apple for having video phone calls

healthcare service, where information isn't properly collected and passed on to other institutions during the patients' health course, and where communication is still done through paper notes or letters. The informant also expresses frustrations over professionals in healthcare who are unable or unwilling to use technology in their work, cf. the problem of organizational inertia discussed in chapter 2.2.1. (Smits et al., 2010). As previously mentioned, this phenomenon is also known as "resistance to change" in psychology, where the benefits of the organization are not necessarily consonant with the interests of the individuals being asked to make the change (Oreg, 2003). An added problem to reduced efficiency is of course the cost of having a professional going on home visits every day, instead of communicating with patients through for example video phone calls.

Informant 3 (I3) agreed with much of what I1 said, and accused Norwegian organizations in particular of being too traditional, and afraid of exploration: "Usually they have to wait for their five year-plan, and have to make plans, and bring everybody on board, and then there's all these cultural issues". He also underlined the importance for companies to immerse themselves in the lives of the customers that they are trying to serve. Many companies get bogged down with things like bottom line, financial returns etc. He continues "I've started to realize that the more you focus on business, the less you focus on people". When we consider this, there is a fine line that many companies, primarily in the private sector, must tread. To not lose focus on what your mission is, which is to help people and improve healthcare, while at the same time trying to survive in a competition based market.

Informant 4 (I4) adds some new issues to this theme as well. When moving from invention to innovation, cf. the Norwegian government's definition of innovation, many actors experience what is well known in innovation communities as the "Valley of Death" (Skaret, 2015; Skybakkmoen, 2016; Tobiassen, 2016):

"(...) it is often because of traditional thinking, procurement regulations, competition on price, it costs more to buy the first one. The first cell phones were ridiculously expensive. But now it is, you know... It has passed the hurdle, what they call in innovation communities and health (...) as the Valley of Death. From

prototype to commercialized product you must pass this hurdle. And a lot of them die down there⁹”

Furthermore, I4 also touched upon some of the same problems that other informants have mentioned, that there is an unwillingness and resistance to change among some healthcare professionals. Many of them haven't been a part of developing the products, and are uncertain what an introduction of new technology would mean for their own practice. As informant 4 says, there is no “quick fix” to this. There must be a balance between tempo and patience, to allow new technology to find its place and become the new standard. Healthcare is rich in evidence-based innovations, yet even when such innovations are successfully implemented in one location, they often disseminate slowly – if at all (Omachonu & Einspruch, 2010). Research also shows that it is difficult to change the behaviour of clinicians (Greco & Eisenberg, 1993), medical practices, and healthcare organizations (Shortell, Bennett, & Byck, 1998), consolidating the argument of organizational inertia in the Norwegian healthcare system.

Informant 4 also talked about the political structure of Norway as a potential roadblock from rolling out new technology, with the municipalities as their own legal entity, and bound by rules, laws, and rights. Norway's political culture is an important part of civic society and professional working life, which further slows down processes: “To develop standards in this area is a consensus based process where many people need to be heard. That takes time”.

However, it is necessary to emphasize what field of expertise we are discussing here. Healthcare is something that can be very personal to many people. Healthcare innovation represents a rather unique and complex case, and there are problems of healthcare systems which are slow to implement changes (Länsisalmi et al., 2006). Laws and rules that protect patients are important, and if they slow down the technological advance, one must find another way, or better way, to address issues without compromising patient security. Innovations in patient care, treatment practices and hospital procedures may include significant health risks, related to financial, social and ethical issues, causing the adoption of healthcare innovation to be regulated by laws, making change more laborious (Länsisalmi et al., 2006).

Going back to what was mentioned in the second theme-section, concerning the strictness of EU application, it may be necessary to intentionally slow down progress in order to let the rest

⁹ Metaphorically speaking

of the healthcare ecosystem to catch up with new technology and methods. On the other hand, as informant 1 mentioned, a lot of the technology has been available for many years and is widely used among the population. Data from the National Statistical Bureau (SSB) confirms that use of ICT in the Norwegian population is far-reaching (SSB, 2016), and the Agency for Public Management and eGovernment (DIFI) believes that the preconditions for high use of digital services are met (Andersen, 2014). So, the discrepancies between the tempo of inventions and application of new innovations are obvious. In some cases, they are necessary. In others, they could be reduced or maybe entirely removed by focusing on actually implementing new solutions.

For the final point, we also touch upon what was mentioned in the second theme-section, that EU application requires some extensive expertise. This is also the case for the domestic healthcare technology industry. Informant 2 underscored that it is an industry that relies on competence, making cooperation and joint action an absolute necessity:

“you have to be competent and smart, because it is a knowledge-intensive industry, so (...) there’s very few, I don’t know anyone who has succeeded in this alone. You have to make sure that you establish a network of competent people who know the different things, so you can move as fast as possible. And to move you need money. So, there is a lot of things to focus on at the same time. Then there is the regulatory stuff (...), the regulatory demands are very strict for complicated solutions (...) To create a strategy for how you can document that you fulfil these demands is super important in this business. Absolutely crucial.”

I believe that this is a good example of how cooperation can be the optimum strategy, c.f. Scott (2000) in chapter 2.2.2., providing both a challenge and new opportunities.

4.2.4 Motivations

The motivations of the actors working in the healthcare technology industry is the main aspect of this thesis. Conversation about motivations also makes up the main part of the interviews, as the informants did a lot of reflection around it and came up with many anecdotal examples. Most of them also spoke of their impression of the industry in general, of present and former colleagues, and the people they meet in their job. Interestingly enough, they also highlighted the possible motives differently from each other, emphasizing other motives rather than just financial rewards and altruism as the main drivers.

That being said, according to informant 1, idealism is in fact a main driver for many: “Nobody has materialistic motives in those communities, when you are in a research environment or competence environment, there are idealistic needs, and it’s kind of a mandate to find out what works and what doesn’t”. She denies there being actors driven by a materialistic purpose, and also follows up with a different perspective: She claims that these communities have a mandate to do what they do, sort of a duty to work out these problems that they have the expertise and competence to address. Decisions following this rationality fit well with Weber’s value-rationality (Ritzer & Goodman, 2003; Schiefloe, 2003), as discussed in chapter 2.2.4., where personal conviction is a strong drive. Her personal drive is a desire to improve healthcare services, and she wants to contribute with her “niche competence”, that she has gained through working with implementation of new healthcare services. It seems evident that the informant believes that actors who work in this industry not only do so because of a freely made up desire to contribute, but also because of a sense of duty. She does, however, recognize that financial liquidity is a basic need that all businesses and firms have, and that many health tech actors, in particular suppliers, work accordingly.

However, financial liquidity in this regard is only a tool to achieve another, altruistic or idealistic purpose, an indicator of a logic of appropriateness or value-rationality. Informant 3 corroborates that there is definitively a financial aspect of the healthcare industry, but believes that there is a middle ground where most actors find themselves:

“I’m sure there are people who are just driven by money, there’s other people who are simply driven by altruistic perspectives. But I think, most people lie in between. And that’s not a bad thing. Achieving social impact does not need to be mutually exclusive to achieving economic impact. When you are able to mix those two worlds together, that’s where the magic happens, right?”

However, he has some reservations in order for this to work. There are a lot of grey areas between being financially successful and socially successful, and it needs to be managed correctly: “(...) but if you are smart about it, ethical about it, and if you have the right intentions, the two worlds can co-exist.” Speaking on his own behalf, he is opposed to the idea of only making money for the sake of making money, claiming that he would feel “dry and empty inside”. As a person who works with social innovation, he emphasizes the human factor in working with healthcare, and is inspired by being around people who can actually have a huge impact on human lives.

Individuals who are at the top of their firms or institutions are able to reflect on behalf of their organisation. Informant 3 further elaborates on this, and believes that focusing business strategies on the human factor, to actually have an impact on people's lives, could be a great motivator for people. In this case, we would have to look back to what was discussed in chapter 2.2.3., on whether individuals adopt a logic of appropriateness in their workplace or not. Informant 3 also speculates on how the mindset of younger generations is different from before, where people just don't want jobs, but want to develop themselves as good human beings, who are environmentally friendly and "human friendly". Put in the context of famous psychological theorist Abraham Maslow's hierarchy of needs, this would mean that younger generations seem to have reached the summit of the pyramid, self-realization (Schieffloe, 2003).

One can speculate that younger generations do not go after jobs because it pays well – they take the prospects of job and income almost for granted. Their focus is rather on doing something worthwhile, and meaningful. This also changes the premise for how people are motivated in their job. It may also strengthen the explanatory power of logic of appropriateness, now that young people are, supposedly, already wired to work based more on the rules, norms and identities guiding human life, and with a stronger human-factor perspective (March & Olsen, 2004, p. 3). In the case of the healthcare technology industry, we have already seen from the previous informant that this perspective is dominant, and the remaining informants also support this notion. If given time and opportunity, it could be interesting to analyse the difference in motivation between older and younger generations in healthcare based on the claims of informant 3. In any case, informant 3 departs somewhat from informant 1's rather firm conclusion that actors in healthcare technology are driven by idealism. I3 is more open for the possibility of profiteering as a motive, although he rules it out for himself and disregards it as a motive for young generations, who he believes have other aspirations rather than making money.

Moving on, informant 4 makes a distinction between working in private and public sector:

"(...) it is popular to work with public sector. It feels more beneficial to society, than trying to raise the bottom line of a private company. So that is a drive, and within public sector I often hear that health is the most important thing you can do. (...) So, I think that those who work in the health sector, they have a personal passion for working with what they feel is the most meaningful".

Worrying about funding is a necessary part of running a company, and if you do well it can be very financially rewarding. As informant 4 states, this may be a hindrance to individuals' motivations, who feel it is more beneficial to work in a sector where the need for funding isn't as important as in a public institution. As informant 5 says, who works for a public hospital, his hospital does not aim to create a stock company or a corporation. Their mission is to solve important problems for people they care about. It is not unthinkable that business interests can run contrary to innovation goals in a private company, limiting the output of innovation. For instance, O'Brien finds that pursuing competitive strategies premised on innovation requires some financial slack, and firms that don't recognize this are likely to perform poorly (O'Brien, 2003). This can further harm the motivations of individuals working there, being concerned by financial constraint and so forth. This brings us back to Horizon 2020 again, which provides an alternative to funding and helping those who can present excellent research and be competitive in an international market. Furthermore, if we look back at what was mentioned in the theme-section on benefits of EU project participation, Horizon 2020 more or less forces actors to think through their strategies to be able to receive funding. A good strategy, backed by funding, shared competences and an international network can be a solid foundation for allowing individuals to perform in their job, and frees up capacity for them to do what they feel is necessary and important.

Continuing his reflections around business interests, informant 4 makes an interesting point on a pattern that he believes has started to emerge in the healthcare technology industry. As mentioned in both chapter 1.1. and 1.4.1., there is a growing demand for better healthcare services and technology due to rising numbers of elders, along with chronic diseases, etc. A new market is thus emerging, with the traditionally strong and profitable oil industry in recent decline (Fredriksen & Johansen, 2015). Many actors see this as an opportunity to shift into new markets, and to adapt their technology and expertise to suit new needs and profit from the "new oil" that is healthcare. The informant believes that consumer demands is an important driver for many companies, fuelled by a need to improve the sustainability of a health and welfare system creaking under the pressure of the number of old and chronically sick people. After addressing this issue, he also comes back to what previous informants have responded about this issue, and takes into account the "money-question":

"If I were to sit here as a technology supplier, I would say, I "want to save the planet". You know. Create a better life for people. But we can't do anything

without money. So, you have to make money. And it must be allowed to say that. But, I know, and I think, that many could have worked with other things, sectors, who have the same enthusiasm and impetus, but health has an added value. (...) it is nice to go home after work and know that today we have developed a product or service that will make people better off”.

So far, we have covered the aspect of idealism and money as being two main drivers for working with healthcare technology. The remaining informants, informant 2 and 5, also acknowledge these two factors as central for the discussion around the topic of this thesis. In addition to this, they also bring some new perspectives to the table. Informant 2 works in one of the biggest business clusters in Norway, and conveys her impression of entrepreneurs who are stimulated by their “thirst for knowledge”: “You have to use yourself all the time, because this is not an easy industry to innovate in. It is absolutely (...) complex and you need high level competence to make it (...). So, it is a knowledge demanding sector. And that inspires skilled people.”. She continues: “At the bottom of the list (...) you have the money aspect. (...) that is not the main driver. That it is fun, it is meaningful, and that you get to use your critical sense, and make use of your skills and competence”. She also emphasizes the challenges that the business aspect of working in healthcare technology bring, where difficult issues stimulate the “thirst for knowledge” among innovators. So, being challenged on a day to day basis, applying ones’ skills, experience, and expertise to solve problems is a major incentive to work with healthcare technology, lending credibility to the venerable Abraham Maslow’s hierarchy of needs, as we seem to have moved on to the last step in the hierarchy of self-realisation (Schieffloe, 2003).

Working in an industry that is challenging and testing seems to be a motivational factor that is not properly taken into account by our two types of logics. On the other hand, these factors could perhaps be explained by Weber’s value-rational action, as individuals wish to test their skills in a challenging sector. Finally, informant 5 brings up the idea of prestige as being something that actors in healthcare technology industry can find motivating. The possibility of joining international projects and gaining attention and accolades as a result of excellent research can be inspiring, and an added benefit to participation in EU projects, as mentioned in the first theme-section. A feeling of prestige and attention he believed could be a great motivator, and of course a nice bonus, as mentioned in chapter 4.2.1. This can of course go both ways, motivating to participate in H2020 and research co-operations, and boosting the moral

and aiding actors to utilise their knowledge to produce excellent research and contributing to better healthcare

Chapter 5 Summary

The previous section has analysed the motivations of actors in healthcare technology, and to what extent the Norwegian government's strategy to promote innovation influences their decisions. As we could see from the first theme-section, there are a lot of clear benefits of participation in international projects orchestrated by the EU. Gaining international networks, being a part of prestigious projects, and of course receiving important funding are three central factors for why actors choose to participate in Horizon 2020. These benefits seep into the actors' motivations for working with healthcare, but it does not seem to be pivotal. All of the informants emphasized the wish to contribute to improving healthcare systems from an idealistic or altruistic perspective, a desire to tackle contemporary and future societal problems, along with being challenged in their everyday work, and the possibility of learning from the best actors in the field.

In the following section, I will go through the subordinate research questions once more, and try to provide an answer to each of them, based on the data from the analysis. When all three sub-questions are answered, I will provide an answer for the main research question, and thus conclude this thesis.

5.1 Subordinate research question 1

All of the informants acknowledged that there is a market for new healthcare solutions, creating opportunities for business and profit. Money is indeed essential for large parts of the healthcare eco-system, and as informant 4 says: "we can't do anything without money". Especially in the private sector, funding is necessary to keep the industry going. It is rational to participate in H2020, and it follows the logic of consequentiality, not because of the goal itself, but rather as a means to an end. Performing well in application processes in Horizon 2020 also encourages private funding, aiding competitive firms and actors to excel in their work, providing the healthcare sector with better solutions. One cannot evade the fact that money plays a pivotal role in this sense.

Weber et al. (2004) discusses the problem of social dilemmas, which can be defined by two characteristics: (a) at any given decision point, individuals receive higher payoffs for making selfish choices regardless of the choices made by those they interact with, and (b) everyone involved receives lower payoffs if everyone makes selfish choices than if everyone makes co-

operative choices. They are situations in which individual rationality leads to collective irrationality, where individual reasonable behaviour leads to a situation where everyone is worse off than what they could have been otherwise. When we look back at the problems identified by some of the informants, I believe, to a certain extent, that this is also true for the healthcare sector. The informants mentioned, for instance, doctors and practitioners who are sceptical of new technology, fearing what its application may mean for their own job.

On the other hand, many businesses in healthcare technology are forward leaning, actively seeking engagement and cooperation with similar firms in the industry. The problem arises when the innovation process stops at the invention-level, when it doesn't get implemented, as per the definition of innovation (Nærings & Fiskeridepartementet, 2010) and by statements made by the informants. Thus, the healthcare sector seems to be somewhat divided. Undoubtedly, there are doctors and other professionals who are optimistic towards new methods and innovations, but they appear to be a minority, without having researched this any further. Be that as it may, the main impression is nonetheless that the practitioner-part of the healthcare eco-system serves as an innovation roadblock. This could perhaps strengthen the support for the logic of consequentiality, with professionals seeking to protect what they have, in fear of being reduced in relevance to the healthcare sector, for instance.

Sub-question 1 asked the following: “do actors in healthcare experience that self-enriching rewards, like money, or prestige, is the main motivation for working in healthcare?”. Based on my findings in this thesis, I would say the answer is no, but with some apprehensions. Money and prestige is, in fact, quite important. Nothing can be done without money, but it is mainly treated as a means to an end. Individuals do not throw themselves at the challenges facing healthcare because they are able to make fast money. From what my informants tell me, innovation takes a lot of time and resources, and there are so many obstacles on the way to a new product or service before one can reap the benefits and profits. It is a difficult business to innovate in, with high demands with regard to patient security for instance, thus more or less eliminating any possibilities for quick profiteering. Those seeking easy and high income from an early stage would probably have more luck in a different industry.

5.2 Subordinate research question 2

My informants mainly pointed at the idea of improving healthcare as a main motivation for most actors, and that idealistic and altruistic motives drive them. Money is vital, as we've seen,

yet it does not provide actors with the motivation to do what they do. All of the informants emphasized that they did not believe money was a motivational factor for most actors who involve themselves in the healthcare technology industry. Informant 5, who works with innovation in a public hospital, underlines the fact that it is not their job to make money in the same sense as a private company, but they still do their job, nonetheless, pushing new innovations and solutions in healthcare. Financial reward is not what drives healthcare actors, but it is an important and necessary part of the innovation process. It is reasonable to assume that most actors would not be able to do what they do, if there were no sufficient or adequate funding opportunities available.

One of the main aspects of working with international partners through Horizon 2020 is the opportunity to learn from others, sharing knowledge and views, opening up new directions for innovation and paths to explore. The same principles apply, of course, also to actors who work mainly with domestic projects. The point is that co-operation, putting trust in others and maybe even choosing the less profitable option for the sake of others, does not sit well with the logic of consequentiality. It is however a major aspect of the day-to-day work for many actors in healthcare technology industry, not just being a value in itself, but also quite necessary to be able to solve health related challenges.

Furthermore, one of the informants claimed that, by having expertise and competence within healthcare technology, or the ability to help improve the healthcare services, you have a mandate to do so. Having such a strong, personal conviction belongs with Weber's value-rationality (Ritzer & Goodman, 2003), but it can also be argued that a mandate, as such, refers to a rule or norm that indicates that you must help if you can, thereby supporting the logic of appropriateness.

I also discussed the idea of younger generations having a more value-based attitude towards working, where the focus is on doing something worthwhile and meaningful. It could perhaps be argued that such individuals have reached the top of Maslow's hierarchy of needs, and values are indeed a central feature of the logic of appropriateness (March & Olsen, 2004). Lastly, it was pointed out that individuals who work in healthcare technology industry probably could have done the same job in other sectors, with the same enthusiasm and impetus. The major difference is the added value that working with health brings, and the knowledge that you have contributed to improving someone's life.

Thus, as an answer to question 2: “do actors in healthcare experience that value-based concepts, like idealism or altruism, is the main motivation for working in healthcare?”, I would have to say yes, based on my findings. One can argue at lengths for the importance of money and funding, but at the end of the day, individuals work in this industry for other reasons than personal gain.

5.3 Subordinate research question 3

At a first glance, the ability of the Norwegian government to influence actors’ decisions to work in the healthcare technology industry and participate in H2020 seem to be marginal. All the respondents were quite clear on what motivates actors, and government incentives were hardly mentioned as a prominent influence. Furthermore, there are certain problems related to EU project participation that can put a damper on the desire to involve oneself in Horizon 2020. For instance, the fact that one could use years on forming an application, just to be shot down because of a typo I believe could be quite discouraging. The level of bureaucracy can be overwhelming for small or medium sized enterprises, along with challenges related to culture and language. All of this provides actors with blockages, discouraging them from participating.

However, the strictness and necessary quality of H2020 applications is arguably very much needed, as argued in chapter 4.2.3. The healthcare challenges facing Europe need to be addressed, and through the gauntlet of H2020, only the best solutions win through. Informant 3 is very active in social innovation, and believes that there are too many rules tying the hands of innovators, and that they are “the maintainers of status quo”. By pushing the boundaries and breaking some of the rules, “the results can be amazing (...) if that happens, in a smart, well thought out way, without risking peoples’ lives (...)” Admittedly, the rules are usually there for a reason. In the case of healthcare, rules guarding personal or sensitive information are perhaps especially important. In the case of H2020, the rules and requirements are in place so only the ideas and businesses that are competitive enough will succeed. On the other hand, despite the tough demands of H2020 applications, Norwegian actors are still geared towards participating, something the government tries to stimulate by setting ambitions and goals, and even provide financial means and backing actors to be able to do so.

Many of the innovations in healthcare have been initiated by the healthcare stakeholders: patients, patient advocacy groups, healthcare organizations, physicians, other healthcare professionals. In some cases, the need for change is forced upon the healthcare organizations

by the government in an effort to mitigate healthcare concerns and challenges (Pelkmans & Renda, 2014). If we recall the statement by Prime Minister Erna Solberg from chapter 2.0., researchers can “no longer opt out from the European research and innovation cooperation” (Kunnskapsdepartementet, 2014a), effectively putting pressure on them to participate in Horizon 2020. A feeling of pressure to participate was something the informants did not mention, however, and I got the impression that those who were leaning towards participation did not do so because of government pressure or regulation. Other motivations like prestige, funding, learning, and personal joy with the work, were more important, and actors made rational, well thought out decisions on whether to participate or not. To answer the sub-question, “how can the Norwegian government stimulate motivation to participate in Horizon 2020?”, we should look at this thesis’ results in total. The logic of appropriateness is arguably the logic that withholds the most explanatory power, and with that, the government should adopt a policy of encouraging actors by appealing to their sense of duty, emotions and empathy, and thus perhaps be able to stimulate to more participation in Horizon 2020.

5.4 Conclusion

Considering the results of the analysis in light of the three sub-questions, we can conclude that my assumptions tied to the logic of appropriateness seem to find the most support. The answers to the sub-questions can be summarized as follows:

Sub-question 1: Individuals apply a logic of consequentiality in certain situations, to get funding for projects or businesses

Sub-question 2: However, this is just a means to achieve the real motive and the underlying motivation, which seems to be founded on a logic of appropriateness, and;

Sub-question 3: Based on this, the Norwegian government should probably put more emphasis on arguments built on a logic of appropriateness when attempting to motivate actors to participate in Horizon 2020.

My main research question is, “what motivates individuals to work on the Norwegian healthcare technology industry, and how does EU policy on healthcare affect these motivations?”. As has been stated quite adamantly by my informants, personal gain in form of financial success is not what motivates actors to work in healthcare technology industry. Money is without a doubt an essential aspect of the industry, but it is not what drives people in the first place. It is a means

to an end, and individuals are driven by empathy, idealism and altruism, a desire to improve healthcare and make life better for those in need of healthcare.

We have also learned that rationality is not something that the logic of consequentiality can claim ownership to. Through Weber's concept of rationalism (Ritzer & Goodman, 2003), the idea that an actor's decision is what holds the most expected utility is not necessarily true, because it may not be the actor's goal at that time. He extends rationality beyond just expected utility, and takes emotions and feelings, beliefs and personal conviction, and traditions, into account. Thus, he also covers the basis of the logic of appropriateness, which holds socially constituted norms as the basis of rational decision-making.

With regard to the second part of the research question, the Norwegian government obviously wants actors to participate in H2020 to a much larger degree. Governmental bodies like the Norwegian Innovation Council and Innovation Norway attempts to coordinate the efforts, promoting better research and innovation, offering financial support both directly, and supporting actors who can't bear the additional costs incurred by the H2020 application procedure. Furthermore, a strategy on how to appeal more to idealistic and altruistic motives should be developed.

Chapter 6 Concluding remarks

This thesis has analysed Norwegian actors' motivations for working in the healthcare technology industry. It is a relevant subject to study, as the future of healthcare will most likely look quite different from what it does today. The demands and strain put on domestic healthcare services, not just in Norway, but all over Europe, will reach an all-time high within the next decades. Just the sheer increase in number of people poses a major challenge, in addition to ageing and increase in chronic diseases. If these challenges are not met, it could may well threaten the foundation of the welfare state, tipping the scale of incomes vs. expenses to an unsustainable level.

On the positive side, these are not hidden challenges. We know that they are coming, and slowly but surely, measures are being taken. At the forefront, the EU encourages, aids and rewards actors in both public and private sector who can come up with the best solutions, through its massive research and development-programmes. The health-related problems are mostly the same for all countries, but not all countries are able to handle it as well as others. The EU makes it possible to work across borders, and it promotes excellent science, industrial leadership, and a common front against societal challenges.

To understand the research question better, this thesis has applied the logic of consequentiality and the logic of appropriateness as theoretical framework. They both explain individual behaviour, and the kind of rationality that lies behind peoples' decisions. In the case of healthcare technology innovation, the latter must be said to have the most explanatory power. I believe one of the main reasons for this, is the nature of healthcare it itself. It is, naturally, a very human, and inter-personal aspect of healthcare, a presence that is arguably stronger than in other, major industries, e.g. the oil industry to use another important, Norwegian industry. The Norwegian government even emphasizes this when it develops strategies to tackle health challenges, by encouraging more participation in H2020, for instance. Yes, money is indeed necessary, and what the government is currently doing in terms of funding is without a doubt very important. How a long-term strategy for research and innovation based on a logic of appropriateness would look like, is something I do not have the answer to. However, I know that it is what motivates actors to work with healthcare technology in the first place, and maybe governmental efforts should somehow recognize this more clearly.

6.1 Potential weaknesses

This thesis has mainly based its argument assumptions derived from a theoretical foundation, and tested them against empirical data. Some of the aspects that it explores, for instance empathy, and altruism, is not something that lies close to the field of political science, or a study on policies in general. I believe the thesis could further strengthen its argument if it were to confer with research in psychology on the aspect of empathy and altruism, defining it more clearly and it could perhaps even serve as a theoretical foundation itself.

I would also like to return to the issue of social desirability, as I discussed in chapter 3.2, and chapter 3.7. The use of proxy subjects only has an effect up to a certain point, and its influence should be determined on a case-by-case empirical evaluation. The latter mentioned the problem of informants manipulating the social encounter that is an interview to their advantage, whatever that may be. Although I believe my informants spoke truthfully and without any agenda of their own, one can never be entirely sure how accurate their narratives are, a potential issue that may affect the validity of the thesis.

Finally, an obvious limitation to this thesis is the use of only five informants as the basis for data collection. With a massive healthcare sector that continues to grow, there are naturally a lot of people working in it. If I were to include, say, four times as many informants, the conclusion might be different. As mentioned in chapter 3.4., I've tried to redeem this problem by carefully selecting the informants based on their positions, both in public and private sector. It is nonetheless difficult to escape the notion that individuals further down in the hierarchy might have different opinions. It is reasonable to believe that the problem of selecting individuals in leadership positions, as I have done to some degree here, is that they have different priorities regarding personal income, for instance, than the ones' "working on the floor". Their decisions perhaps change accordingly. This certainly affects the generalizability of the thesis, but as I discussed in chapter 3.6., I believe the five informants, with their backgrounds and experience, provide us with a basis on which we can, at least to some extent, make a general assumption on what motivates actors and individuals to work in the healthcare technology industry.

6.2 Future research

One of the main issues highlighted by my thesis is the problem of resistance to change in healthcare. It would be interesting to explore this further and work out some of the mechanisms to why this is happening. I have mentioned some aspects of it here, for instance the fear of implications for one's own situation. It would seem logical that practitioners would be the ones to encourage innovation, as they are the ones using new and better technology in their day-to-day-work. However, this does not seem to be the case. A relevant research question could be: what are the principal catalysts for healthcare innovations – the patients, the physicians, costs, safety, quality, profitability, productivity, etc.? Anyone can provide the inspiration for innovation, and the need for innovation can be identified at many levels of healthcare.

Building on the previous question, one could further explore what steps are taken by individual healthcare organizations in adapting an existing technology for their purposes. Every organization is different in terms of culture, leadership, people, and resources.

At any rate, the Space Race continues, driven ever harder by a demographic development that, if left unchecked, threatens to topple the very foundations of the welfare state. In a time when the share of people in need of care is about to outgrow the share of people able to provide care, the motivation to keep creating better technology should remain strong.

Bibliography

- Andersen, H. (2014). Digitale nok innbyggere? Retrieved from <https://www.difi.no/blogg/2014/09/digitale-nok-innbyggere>
- Balsiger, J. (2014). Logic of Appropriateness. *Encyclopedia Britannica*. Retrieved from <http://www.britannica.com/EBchecked/topic/1937900/logic-of-appropriatenessLogic>
- Beamer, G. (2002). Elite Interviews and State Politics Research. *State Politics & Policy Quarterly*, Vol. 2 (Issue 1).
- Bernard, R. H., & Ryan, G. W. (2010). *Analyzing Qualitative Data: Systematic Approaches*. Los Angeles: SAGE Publications.
- CB Insights. (2016). Healthcare's "Space Race": 15 Investors, Corporate Execs, And Regulators Sound Off On Digital Health Disruption. Retrieved from <https://www.cbinsights.com/blog/digital-health-investor-commentary/>
- Direktoratet for e-helse. (2016). Om direktoratet for e-helse. Retrieved from <https://ehelse.no/om-oss/om-direktoratet-for-e-helse>
- Drefvelin, C. (2017). Smittebæreren. *Dagens Næringsliv*. Retrieved from <http://www.dn.no/grunder/2017/04/18/1040/Helse/smittebaereren>
- European Commission. (2007). *Togheter for Health: A Strategic Approach for the EU 2008-2013*. Brussels, 2007: The European Commission. Retrieved from http://ec.europa.eu/health/sites/health/files/strategy/docs/whitepaper_en.pdf.
- European Commission. (2013). *Investing in Health. Commission Staff Working Document Social Investment Package*. Brussels, 2013: The European Commission. Retrieved from http://ec.europa.eu/health/sites/health/files/strategy/docs/swd_investing_in_health.pdf.
- European Commission. (2016). *Horizon 2020. Work Programme 2016-2017. Part 8. Health, demographic change and well-being*. Retrieved from http://ec.europa.eu/research/participants/data/ref/h2020/wp/2016_2017/main/h2020-wp1617-health_en.pdf.
- European Commission. (2017a). History of Horizon 2020. Retrieved from <https://ec.europa.eu/programmes/horizon2020/en/history-horizon-2020>
- European Commission. (2017b). What is Horizon 2020? Retrieved from <https://ec.europa.eu/programmes/horizon2020/en/what-horizon-2020#Article>
- Eurostat. (2017). Unemployment statistics. Retrieved from http://ec.europa.eu/eurostat/statistics-explained/index.php/Unemployment_statistics
- Fagerberg, J., Mowery, D. C., & Nelson, R. R. (2005). *The Oxford Handbook of Innovation*. New York: Oxford University Press Inc.
- Finansdepartementet. (2016). *Prop. 1 S (2016-2017). Proposisjon til Stortinget. Statsbudsjettet.: Det Kongelige Finansdepartement* Retrieved from http://www.statsbudsjettet.no/upload/Statsbudsjett_2017/dokumenter/pdf/gulbok.pdf.
- Finansdepartementet. (2017). *Stortingsmelding 29 (2016-2017). Perspektivmeldingen 2017*. Retrieved from <https://www.regjeringen.no/contentassets/aefd9d12738d43078cbc647448bbeca1/no/pdfs/stm201620170029000dddpdfs.pdf>.
- Forskerforbundet. (2014). *Forskerforbundet: Kartlegging av medlemmenes erfaringer med EUs rammeprogram*. Retrieved from https://www.forskerforbundet.no/Documents/skriftserien/2014-5_EUs_rammeprogram.pdf
- Fredriksen, A. W., & Johansen, E. (2015). Derfor er det krise i oljebransjen. *E24*. Retrieved from <http://e24.no/energi/oljebremesen/derfor-er-det-krise-i-oljebransjen/23468755>
- Godø, H., Langfeldt, L., & Kaloudis, A. (2009). *In Need of a Better Framework for Success. An evaluation of the Norwegian participation in the EU 6th Framework Programme (2003-2006) and the first part of the EU 7th Framework Programme (2007-2008)*. Retrieved from

- <https://brage.bibsys.no/xmlui/bitstream/handle/11250/279816/NIFUrapport2009-22.pdf?sequence=1&isAllowed=y>
- Goldmann, K. (2005). Appropriateness and Consequences: The Logic of Neo-Institutionalism. *Governance: An International Journal of Policy, Administration, and Institutions*, Vol. 18.(Issue 1.), Page 35-52.
- Greco, P. J., & Eisenberg, J. M. (1993). Changing Physicians' Practices. *The New England Journal of Medicine*, Vol. 329(No. 17), Pages 1271-1274.
- Heath, A. (1976). *Rational Choice & Social Exchange: A critique of exchange theory*. Cambridge: Cambridge University Press.
- Hopkin, J. (2002). Comparative Method. In D. Marsh & G. Stoker (Eds.), *Theory and Methods in Political Science*. (Second Edition ed.). Hampshire, UK: Palgrave Macmillan.
- Kunnskapsdepartementet. (2014a). *Strategi for Forsknings- og Innovasjonssamarbeidet med EU. Horisont 2020 og ERA*. Retrieved from https://www.regjeringen.no/globalassets/upload/KD/Vedlegg/Forskning/EU-Strategi_Hele_Nett.pdf.
- Kunnskapsdepartementet. (2014b). *Langtidsplan for forskning og høyere utdanning 2015-2024*. (St. meld. nr 7, 2014-2015). Retrieved from <https://www.regjeringen.no/contentassets/e10e5d5e2198426788ae4f1ecbbbbc20/no/pdfs/stm201420150007000dddpdfs.pdf>.
- Litsheim, F. G. (2016). *The Limits of Self-Europeanisation: Norwegian Health Researchers' Motivations for Participation in Horizon 2020*. (Master), NTNU, Trondheim.
- Länsisalmi, H., Kivimäki, M., Aalto, P., & Ruoranen, R. (2006). Innovation In Healthcare: A Systematic Review of Recent Research. *Nursing Science Quarterly*, Vol. 19(No 1.), pages 66-72. doi:<https://doi.org/10.1177/0894318405284129>
- Løkke, A., & Sørensen, D. P. (2014). Theory Testing Using Case Studies. *The Electric Journal of Business Research Methods*, Volume 12(Issue 1, 2014), pp 66-74.
- March, J. G. (1994). *A Primer on Decision Making. How Decisions Happen*. New York: The Free Press.
- March, J. G., & Olsen, J. P. (2004). The Logic of Appropriateness. Retrieved from http://www.sv.uio.no/arena/english/research/publications/arena-working-papers/2001-2010/2004/wp04_9.pdf
- Messick, D. M. (1999). Alternative logics for decision making in social settings. *Journal of Economic Behaviour & Organization*, Vol. 39.(Issue 1.), Pages 11-28.
- Ministry of Higher Education and Research. (2015). *Effects of participation in EU framework programmes for research and technological development - for researchers, institutions and private companies in Denmark*. Danish Agency for Science, Technology and Innovation. Retrieved from <http://www.ft.dk/samling/20151/almdel/ufu/spm/168/svar/1333465/1647739.pdf>.
- Nederhof, A. J. (1985). Method of coping with social desirability bias: a review. *European Journal of Social Psychology*, Vol. 15, Pages 263-280.
- news.cision.com. (2005). Selvaag Invest Årsresultat 2004. Retrieved from <http://news.cision.com/no/selvaag-gruppen/r/selvaag-invest--arsresultat-2004,c141332>
- NOU. (2012). *Utenfor og Innenfor - Norges avtaler med EU* (Vol. 2). Oslo: Utenriksdepartementet.
- Nærings, & Fiskeridepartementet. (2010, 18.10.2010). Hva er innovasjon? Retrieved from <https://www.regjeringen.no/no/tema/naringsliv/forskning-og-innovasjon/hva-er-innovasjon/id526485/>
- O'Brien, J. P. (2003). The Capital Structure Implications of Pursuing a Strategy of Innovation. *Strategic Management Journal*, Vol. 24, Pages 415-431.
- OECD. (2009). *Achieving Better Value for Money in Health Care*. Retrieved from http://www.oecd-ilibrary.org/social-issues-migration-health/achieving-better-value-for-money-in-health-care_9789264074231-en

- Omachonu, V. K., & Einspruch, N. G. (2010). Innovation in Healthcare Systems: A Conceptual Framework. *The Innovation Journal: The Public Sector Innovation Journal*, Vol. 15(Issue 1).
- Oreg, S. (2003). Resistance to Change: Developing an Individual Differences Measure. *Journal of Applied Psychology*, Vol. 88.(Issue 4.), Pages 680-693.
- Pelkmans, J., & Renda, A. (2014). *Does EU regulation hinder or stimulate innovation?* Retrieved from <https://www.ceps.eu/system/files/No%2096%20EU%20Legislation%20and%20Innovation.pdf>
- Potocnik, J. (2007). The EU's Fifth Freedom: creating free movement of knowledge [Press release]. Retrieved from europa.eu/rapid/press-release_SPEECH-07-257_en.pdf
- Punch, K. F. (2005). *Introduction to social research - quantitative and qualitative approaches*. (Second Edition ed.). London: SAGE Publications.
- Radionordkapp. (2005). Selvaag Invest Årsresultat 2004 [Press release]. Retrieved from <http://www.radionordkapp.no/pressemedling/selvaag-invest-arsresultat-2004/>
- Ritzer, G., & Goodman, D. J. (2003). *Sociological Theory* (International Edition 2003 ed.). New York: McGraw-Hill.
- Sand, G., Schiefloe, P. M., & Aasen, T. M. B. (2005). *Norge 2020. Industrielle og økonomiske fremtidsutsikter*: Fagbokforlaget.
- Sanders, D. (2002). Behaviouralism. In D. Marsh & G. Stoker (Eds.), *Theory and Methods in Political Science* (Vol. 2): Palgrave Macmillan.
- Schiefloe, P. M. (2003). *Mennesker og Samfunn. Innføring i Sosiologisk Forståelse*: Fagbokforlaget.
- Scott, J. (2000). Rational Choice Theory. In G. Browning, A. Halcli, & F. Webster (Eds.), *Understanding Contemporary Society: Theories of the Present* (pp. 126-138). London: Sage Publications.
- Shortell, S. M., Bennett, C. L., & Byck, G. R. (1998). Assessing the Impact of Continuous Quality Improvement on Clinical Practice: What it Will Take to Accelerate Progress. *The Milbank Quarterly*, Vol. 76(Issue 4), Pages 593-624. doi:10.1111/1468-0009.00107
- Skaret, M. (2015). Norsk næringsliv møter oljesmellen med fokus på nyskaping. Retrieved from <https://innovasjonsbloggen.com/2015/08/11/norsk-naeringsliv-moter-oljesmellen-med-fokus-pa-nyskaping/>
- Skybakkmoen, J. (2016). Går tom for penger i "Dødens Dal". *Adressavisa Pluss*. Retrieved from <http://www.adressa.no/pluss/okonomi/2016/02/16/G%C3%A5r-tom-for-penger-i-%C2%ABd%C3%B8dens-dal%C2%BB-12162314.ece>
- Smits, R. E., Kuhlmann, S., & Shapira, P. (2010). *The Theory and Practice of Innovation Policy. An International Research Handbook*. Cheltenham, UK. : Edward Elgar Publishing Limited.
- SPH. (2016). *Better Research for Better Health. A Vision for Health and Biomedical Research*. Retrieved from https://ec.europa.eu/programmes/horizon2020/sites/horizon2020/files/SPH_VisionPaper_02062016.pdf
- SSB. (2016). Bruk av IKT i husholdningene, 2016, 2. kvartal. Retrieved from <https://ssb.no/teknologi-og-innovasjon/statistikker/ikthus>
- Ståhl, T., Ollila, E., Wismar, M., Lahtinen, E., Melkas, T., & Leppo, K. (2006). *Health in All Policies. Prospects and potentials*. Helsinki, 2006.
- Thagaard, T. (2003). *Systematikk og innlevelse: en innføring i kvalitativ metode*. Bergen: Fagbokforlaget.
- Tjora, A. (2012). *Kvalitative forskningsmetoder i praksis* (2nd edition. ed.): Gyldendal Norsk Forlag.
- Tobiassen, M. (2016). Gamle penger ser på nye bedrifter. *Dagens Næringsliv*. Retrieved from <http://www.dn.no/grunder/2016/07/25/2123/DN-Investor/gamle-penger-ser-p-nye-bedrifter>
- UN. (2015). *World Population Ageing* (ST/ESA/SER.A/390). Retrieved from http://www.un.org/en/development/desa/population/publications/pdf/ageing/WPA2015_Report.pdf

- Utenriksdepartementet. (2014). *Norge i Europa. Regjeringens Strategi for Samarbeidet med EU 2014-2017*. Retrieved from https://www.regjeringen.no/globalassets/upload/ud/vedlegg/eu/norge_i_europa.pdf.
- Utenriksdepartementet. (2015). Health. Retrieved from <https://www.regjeringen.no/en/topics/european-policy/areas-cooperation/health/id685833/>
- Weber, M. J., Kopelman, S., & Messick, D. M. (2004). A Conceptual Review of Decision Making in Social Dilemmas: Applying a Logic of Appropriateness. *Personality and Psychology Review*, Vol. 8(Nr. 3.), Page 281-307.
- Yin, R. K. (2014). *Case Study Research. Design and Methods*. (Fifth Edition ed.). Los Angeles, USA.: SAGE Publications.

Appendix 1: Interview guide

Semi-structured interview guide

Introduction

1. My name
2. Explain my study
3. Explain the content of the thesis
4. Inform about the shape of the interview, length, content and anonymity

General questions:

Mapping: Questions about the individual, its position, and the employer

4. What is your role, and how long have you been working with in your current job?
5. Do you work in public or private sector?
6. Do you work domestically or internationally?
 - a. Do you participate in co-operation projects (national/international)?

Deepening: Questions on participation or non-participation

7. If yes:
 - a. What kind of project? Are they directed by the EU, or something else?
 - b. Why?
 - c. How did it work out?
 - d. What dividends are you left with?
 - e. Regardless of answer on question C: Would you do it again?
8. If no:
 - a. Have you considered participating?
 - b. Why/why not?
 - c. What does it/would it take for you to participate?
9. What do others say, who have/have not participated?

Questions for reflection

Funding

10. In many areas of business, making profit is the usually a motivation for many firms. Health care and welfare is one the strongest areas of growth the last years.
 - a. In the case of firms in health care technology, what is your perception of this issue?
 - b. In your case, as a private/public enterprise, how important is funding?
 - c. Would you do what you do if it wasn't profitable/ didn't receive funds from the state/H2020?
 - i. So, the funding from ... is important/not important?

Competences and relations

11. In your opinion, would you say that working with others, learning from others, and participating in networks are important factors for actors who work with healthcare technology?

Feelings and emotions

12. The human aspect of health technology.
 - a. Do people do what they do because they believe it is right/because they have empathy?
 - b. Are there other reasons for them to work with healthcare technology?

Summary question

13. To sum up: In your opinion, what is the most important drive for the individuals in the healthcare technology industry?

Appendix 2: Themes

Name	Sources	References
Benefits of EU projects	4	10
EU project participation	2	5
International projects Non-EU	2	4
Examples of successful innovation	3	6
Pilot programs	1	1
General	0	0
Background	3	6
Daily work	5	9
Other	1	2
Private sector	1	1
Public sector	1	1
General problems-Non-EU	4	22
Innovation application	4	11
Motivations	5	48
Problems with EU projects	3	8

(Screenshot from NVivo)

Name: Show the name of the theme, and what type of information it contains.

Sources: Shows how many sources (informants) each theme draws its information from.

References: Shows how many times a text segment has been marked under the corresponding theme.