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MICHIEL JEROEN HERMAN WILLEM KORTSTEE

MAKING SENSE OF MANAGEMENT INNOVATION IN HEALTH CARE

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Tese apresentada à Escola de Administração de Empresas de São Paulo da Fundação Getúlio Vargas, como requisito para a obtenção do título de doutor em Administração de Empresas.

Campo de conhecimento: Gestão em Saúde

Orientadora: Professora Ana Maria Malik

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Data de aprovação:

___/___/___

Banca examinadora:

Prof^ª. Dr^ª. Ana Maria Malik (Orientadora)
FGV-EAESP

Prof. Dr. Rafael Alcadipani da Silveira
FGV-EAESP

Prof. Dr. Marcos Augusto de Vasconcellos
FGV-EAESP

Prof. Dr. Marcelo Caldeira Pedroso
FEA-USP

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ABSTRACT

This thesis aims at exploring stakeholders' perceptions of management innovation in health care. Rising health care costs due to technological innovation and demographic developments and advanced insights on how health and care could be organized drive the search for new organizational models and technologies that may contribute to better health outcomes for lower costs. Multiple stakeholders across the health care continuum need to collaborate in integrated care networks with multiple interdependent components. The study is based on qualitative exploratory research and consists of a literature review and a case-study at a management innovation in an university medical center. This study explores the vision and perceptions of stakeholders of innovation in healthcare, the innovation process through which management innovations evolve, underlying change and steering mechanisms, critical success factors and results. Management innovations and their implementation are considered complex. It is observed that due to different backgrounds and professional logics, stakeholders have partial and different understandings of integrated care concepts. Awareness of the different understandings explains the importance of an implementation approach of integrated care concepts where these perceptions converge. Sense making, the attribution of meaning to perceptions is essential here. Change does not happen in a vacuum, but emerges in interaction with other actors in the organization and its local context. It is observed in the literature and case-study that sense making processes are at work in the innovation process. Management innovation is merely a spontaneous, unplanned change process that starts with an intrinsic drive and emerges from how people frame what they see, relate it to their values and act upon it in interaction with others. It is a human, subjective, interactive, emergent self-organizing process of sensing and sense making that – if aligned with vision, values and intentions of people – can bring together different stakeholders in joint concepts of integrated care. Leading management innovation processes becomes a matter of guiding and creating room for self-organizing processes in organizations. Examples of management innovation from across the world demonstrate that management innovation can significantly contribute to better health outcomes for lower costs. The willingness, necessity and ability to change determine the pace. Exploring further and investing in the potential of management innovation may be a wise choice to make health systems more sustainable.

Keywords: management innovation, health systems, sense making

RESUMO

Esta tese tem como objetivo explorar as percepções *dos stakeholders* sobre inovação em gestão na área da saúde. Aumento dos custos de cuidados de saúde devido à inovação tecnológica e mudanças demográficas e insights avançados sobre como saúde e cuidados poderiam ser organizados impulsionam a busca de novos modelos organizacionais e tecnologias que podem contribuir para melhores resultados de saúde com menores custos. Múltiplos *stakeholders* em toda a cadeia de cuidados de saúde precisam colaborar em redes de atenção integradas com múltiplos componentes interdependentes. O estudo é baseado em pesquisa qualitativa exploratória e consiste em uma revisão da literatura e um estudo de caso de inovação em gestão em um centro médico universitário. A tese explora a visão e as percepções *dos stakeholders* sobre inovação nos cuidados de saúde, o processo de inovação através do qual as inovações de gestão evoluem, mecanismos subjacentes de mudança e direção, fatores críticos de sucesso e resultados. As inovações de gestão e sua implementação são consideradas complexas. Observa-se que, devido às diferentes origens e lógicas profissionais, *os stakeholders* possuem entendimentos parciais e diferentes dos conceitos de cuidado integrado. A conscientização dos diferentes entendimentos explica a importância de uma abordagem de implementação de conceitos de cuidados integrados nos quais essas percepções convergem. *Sense-making*, a atribuição de significado às percepções, é essencial aqui. A mudança não acontece no vácuo, mas surge em interação com outros atores da organização e seu contexto local. Observa-se na literatura e estudo de caso que processos de *sense-making* estão presentes no processo de inovação. A inovação gerencial frequentemente é um processo de mudança espontâneo, não planejado, que começa com uma motivação intrínseca e emerge de como as pessoas enquadram o que vêem, relacionam-se com seus valores e agem de acordo com eles em interação com os outros. É um processo humano, subjetivo, interativo, emergente de auto-organização de *sensing* e *sense-making*, que, se alinhado com a visão, os valores e as intenções das pessoas, pode reunir diferentes *stakeholders* em um único conceito de cuidado integrado. Os principais processos de inovação gerencial tornam-se uma questão de orientar e criar espaço para processos de auto-organização. Exemplos de varias partes do mundo demonstram que a inovação gerencial pode contribuir significativamente para melhores resultados de saúde com custos mais baixos. A vontade, necessidade e capacidade de mudar determinam o ritmo. Explorar mais e investir no potencial da inovação gerencial pode ser uma escolha sábia para tornar os sistemas de saúde mais sustentáveis.

Palavras-chave: inovação em gestão, sistemas de saúde, *sense-making*

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1. INTRODUCTION

1.1. Introduction & Legitimization

Innovation is not an objective in itself, but it is elementary in making health care better. Many health systems face sustainability issues as large variations and inequalities in access to and quality of health care exist, but also in seemingly well functioning health systems sustainability questions arise as expenditures on health care are consuming a too large share of the national income and compete with other interests of governments, like for instance education and infrastructure.

Over the last 50 years advances in medicine and new technologies in the health sector have brought many benefits to society. We live longer and stay healthier. Today there are many treatments and medicines available for acute and infectious diseases that previously used to be fatal. Life expectancy itself and life expectancy in good health have increased with many years. This brings economic advantages as well: a better health and longer life allow people to participate in and contribute to society for a longer period of their life.

The fact that people live longer and survive diseases that used to cause mortality in the past, makes that the population is ageing. People become older and the percentage of elderly in our society is growing. With age, but also due to modern life style patterns, chronic conditions, like cancer, cardio-vascular diseases, respiratory diseases, obesity, back-pains and mental health problems come along. Nowadays the majority of the health burden in developed Western countries is related to chronic diseases, often caused by changed lifestyle patterns.

In many countries, these demographical developments related to ageing and chronic diseases cause rises in health expenditures and put further pressure on the need of societies to make their health systems sustainable. This necessity can be illustrated by a recent study in the

Netherlands¹ that estimates that health expenditures until 2040 -with unaltered policies- will rise with 2,9 per cent annually while GNP growth for that period is estimated to be 1,8 per cent per year. Health expenditures therefore will consume a constantly growing share of the national product: in the Netherlands is that expected to be 16.4 per cent of the GNP in 2040 versus 12.7 per cent in 2015. Two thirds of the projected increases in health expenditures can be related to new technologies, like medicines, equipment for diagnostics and treatment and surgery robots. One third is caused by demographic developments, like ageing and altered disease profiles. Similar patterns of rising health expenditures and changing disease profiles can be observed in many Western countries, although phasing and pace differ from country to country.

Health systems and organizations in health need to bend the curve of increasing health expenditures and resolve variations in access to and quality of health care services. It is a balancing act to maintain access to and quality of health services for everyone and the affordability of the health system as a whole. It is a challenge to develop approaches with new technologies and new ways of organizing health care that add value, that is, simultaneously attend the so-called Triple Aim: better health outcomes for the attended population, better experiences for both patients and doctors, and lower costs. Michael Porter (PORTER; LEE, 2013) and Maureen Bisognano (BISOGNANO; KENNEY, 2015) label comparable approaches as value based health care (VBHC).

Bending the curve of rising costs in health, while simultaneously improving the quality of care is not only necessary, but also possible.

Over time our understanding of health and health care has evolved. And new technologies and other ways of organizing health care will enable more effective and efficient delivery of health care than is done nowadays. Quite a few paradigm shifts that change how we look at, understand and organize health and care can be observed:

- **Shifts from a focus on disease towards a focus on health, vitality and quality of life:** Under influence of shifting disease patterns and new insights leading health

¹ <https://www.vtv2018.nl/de-zorguitgaven-stijgen>

² See for instance: Govindarajan on the transformation lessons (reverse innovation) that can be learned from

systems move from an orientation on disease and curative medicine to a focus on health, quality of life and vitality with more important roles for health promotion, early detection, prevention and earlier and cheaper interventions in case of treatment. As a consequence of this focus on health it is likely that populations live longer and healthier, which is reflected in a higher economic productivity, lower health expenditures of the population and hence affordability of the health system. Research (Health Policy Brief, 2014) estimates that approximately 50 percent of our health is determined by healthy environments and lifestyles, 30 percent by genetic factors and 20 percent by quality of the health system and its institutions. This awareness let us also reflect on the role of the health sector, its limitations and the opportunities in daily life beyond the health sector to make a positive impact on our health by, for example, stimulating healthier habits and making environments where we live healthier. With aging populations, our understanding of health is not mere the absence of disease, but we consider “health as the ability to adapt and to self-manage, in the face of social, mental and physical challenges of life” (HUBER et al. 2011, p.1).

Accordingly, we are committed to help people to fulfil their personal aims in life despite a disease or having a difficulty.

- **Shifts from treatment and care in health institutes to treatment at home:**
Technologies like E-Health, ICT and Internet-of-Things make it no longer necessary to go to a hospital for treatment of relatively standard health issues. With the help of new technologies and other work models, many forms of treatment and monitoring of chronic patients can be done remotely, while citizens/patients can continue to participate in society. As a consequence doctor-patient relationships alter and hospitals become smaller and more specialized for treating more complex patients;
- **Shifts in organizational models:**
Health care will be more and more organized in integrated health care networks with multiple stakeholders. Hub and Spoke structures (PORTER; LEE, 2013; GOVINDARAJAN; RAMAMURTI, 2013) organize for instance hospital care differently and succeed simultaneously in raising productivity and quality of health care, while lowering the costs dramatically by three interventions. First, shifting complex and technology intensive activities to the hub with all expertise, education

functions and specialized equipment and by moving the more routine activities to the spoke facilities that are in general more nearby the attended community. Second, by shifting more routine activities from doctors to nurses and from nurses to e.g. family of the patient. The less expensive nurses and other paramedics are simply better in executing routine tasks than specialists and hence specialists become liberated to dedicate themselves to more complex cases. And third, by applying practices of lean management;

- **Shifts towards innovation models with a more important role for entrepreneurship and cooperation between different stakeholders.** In the common interest of achieving better health outcomes for the population, a better quality of health care and for less costs, various public and private stakeholders join their forces in often public private projects that are guided by concepts of co-creation and open innovation in which the Triple Helix of companies, knowledge institutes and government participate.

Although these paradigm shifts of how we look at, understand and organize health and care give a far from complete idea of the scope of innovations in health care, these innovations have a few things in common and show a tendency in the field of health care towards more integrated approaches and health care processes that cover the continuum of promotion, prevention, treatment and rehabilitation. Interventions are done at an earlier moment in the health process aiming at maintaining health and preventing disease. Health care is delivered by networks of collaborating social and health care providers with expertise and competences in complementary fields. Technological solutions, like E-Health and ICT, enable and give support to other ways of working by making ICT systems inter-operable, integrate processes of different organizations and technically connect stakeholders. Stakeholders in health care work together and adopt more entrepreneurial approaches and co-creation.

The more holistic or integrated approaches towards health and care could be considered more management innovations than technological innovations. These are based on different visions and understandings of health and care and how they can be organized more effectively. The single elements and supporting technologies of the integrated care networks are not new, but

the novelty lies in the combination of the elements and the collaboration of stakeholders across the integrated care networks aiming at synergies.

All examples of innovations in health care include adoption of both new technologies, new business models and other ways of working. Historically many innovations were driven by the development of new technologies. As growth in health expenditures related to technologies is not sustainable, nowadays the main driver of innovation in health care may become management innovation, either as complementary to technological innovation, e.g. in remote consults of chronic patients that measure their condition with wearables, or on its own in, for instance, concepts of integrated care or value based health care.

Few organizations lead innovations and results seem limited

These examples propose paradigm shifts towards other models of working and organizing that are considered nowadays ‘state of the art’. Although the models intuitively contain a logic that is hard to negate, the question that arises is how organizations engage in innovation and adopt and implement these new models. A broader look at the health care sector in different health systems - Brazil and the Netherlands- gives the impression that certainly a few organizations engage in efforts to innovate their way of working and some are successful in doing so. The vast majority of organizations, however, does seem to assume a more wait-and-see attitude. Furthermore, if organizations are actively innovating, many times the formulated objectives are not achieved, or it takes much longer than expected. And there are many organizations that develop policies, innovative projects and long term plans with important roles for innovation that, however, more than once remain a ‘paper promise’. The same goes for the newly established innovation departments that are no guarantee that an organization becomes innovative.

There are also indications in the literature (SCHAIK; IDENBURG, 2013; TNO, 2013; VOLBERDA; BOSMA, 2011) that ‘social innovation’, another term for management innovation, that is ‘other ways of working’ is yet an uncomprehended field that has received relatively little attention from researchers until so far and that its impact on innovation outcomes might be significant. INSCOPE’s Competitiveness and Innovation Monitor (VOLBERDA; BOSMA, 2011) estimates in a research under 1000 companies in the Netherlands in the period 2005 - 2010 that 25 percent of their innovation success is due to

technological innovation and 75 percent of innovation success stems from social innovation (VOLBERDA; BOSMA, 2011). With regard to innovation in health care Schaik and Idenburg (2013) and TNO (2013) emphasize a hidden potential of social innovation that could be retrieved by more ‘low tech, high touch’ strategies.

Furthermore, next to awareness that management innovation might be at least as important as technological innovation for transformation of health systems, the topic of transformation in health care itself is also gaining more attention² of researchers.

These observations that relatively few organizations successfully adopt new technologies and innovate their way of working are hard to reconcile with the postulated relevance and logic of innovation for the health sector, either for the common interest of society to develop more sustainable health systems, or for the single organization’s interest to attend better the client’s needs and become more competitive.

This leads to the aim of this study: understanding why and how organizations and ecosystems in health care innovate, or not. How does the innovation process evolve? What is in particular the role of management innovation in making health systems more sustainable? How is management innovation related to technological innovation? Where does the process start? Who are the innovators? How do they lead their innovation efforts? Who is involved? What are the critical moments and determinants in the innovation process? What results are achieved? Is it possible to steer innovation processes, at the level of single organizations, in interaction between organizations and in society?

In the next paragraph the problem definition and research objectives are elaborated.

² See for instance: Govindarajan on the transformation lessons (reverse innovation) that can be learned from emerging countries: <https://www.tuck.dartmouth.edu/people/vg/research/current-research>; Health Systems Leapfrogging in Emerging Economies (World Economic Forum, 2016): <https://www.weforum.org/reports/health-systems-leapfrogging-in-emerging-economies-ecosystem-of-partnerships-for-leapfrogging>

1.2. Problem definition and research objectives

Aim/objective of project

Innovation may contribute more to the sustainability of health systems than it does nowadays. However, how innovation in health care really works, is at best partly understood and relatively few organizations are successful in implementing new practices. Especially management innovation - that is 'the invention and implementation of a management practice, process, structure, or technique that is new to the state of the art and is intended to further organizational goals' (BIRKINSHAW; HAMEL; MOL, 2008) - is relatively an unknown and young field that could have, both complementary to technological innovation, but also on its own, a major impact on innovation results in health care. It is the aim of this project to explore stakeholders' perceptions of management innovation in health care. What perceptions do stakeholders have of innovations in the health care sector in general? What does it mean for their work? What does it entail? How does it work? How can it be steered? This understanding could be valuable if we succeed better in bringing management innovation in health care in practice.

Research question

This study aims at answering the following research question:

What is the role of management innovation in making health systems more sustainable?

Sub-questions

To answer the research question, I will address the following sub-questions:

Why do we innovate? What are stakeholders' perceptions of innovation in health care?

Innovation is an umbrella term. People and organizations may have quite different ideas of innovation in health care and what innovation could contribute to their work and the health sector. Answers on this sub-question will give insights from what perspective individuals and organizations engage (or not) in innovation.

How do management innovation processes in health care typically evolve? How are these processes steered? Who is involved?

It would contribute to our understanding of innovations aimed at the development, adoption and implementation of new management practices if we could follow the innovation, and the actors that act and interact upon it, through the different phases of the innovation process.

What are critical success factors for management innovation in health care?

The purpose of answering this sub-question is getting insights, which stakeholders or factors further or impede the embedding of innovations in organizations and society. What is the role of entrepreneurship, public policies and innovation eco-systems that bring stakeholders together?

What are results of management innovation in health care? What results are attributable to management innovation?

Although often intangible and difficult to measure, innovation has to add value to organizations and the health system; innovation is not an objective in itself. Is it possible to value the results? And if so, are the results relevant for the sustainability of health systems?

Can the health sector steer more effectively in developing, adopting and implementing management innovations that make health systems more sustainable? If so, how?

Understanding how innovation in health care works, only adds value if we succeed better in bringing it into practice. What steering and guiding principles are most effective in enhancing management innovation in health organizations and ecosystems?

1.3. Scope and methodological approach

Scope

The core question of this study relates to how management innovation could contribute to sustainable health systems. This section explains the focus and reach of this study.

Relation between management innovation and sustainable health systems

In this research project the role of management innovation is explored as a means to make health systems more sustainable. To understand the relevance and potential impact of management innovation on sustainable health systems, a general understanding of what defines high-performing health systems and their sustainability is essential.

The World Health Organization (MUSGROVE et al., 2000) defines a health system as the sum of all the organizations, institutions and resources that are devoted to producing health actions for a specific population. A health action is defined as any effort, whose primary purpose is to improve health. In their health actions health systems pursue goodness and fairness for the entire population they attend. Goodness is understood as the best attainable average level of health for the attended population while fairness is defined as the smallest feasible differences among individuals and groups (MUSGROVE et al., 2000; SCHÜTTE; ACEVEDO; FLAHAULT, 2018) add to the WHO definition the characteristic that the purpose of improving health is fulfilled with limited resources.

A good health system delivers quality health and care services to *all* people, when and where they need them³. However, bringing that objective in practice is easier said than done. First, there does not exist a single best health system (e.g. BRITNELL, 2015), nor is there consensus on what exactly defines a high-performing health-system (e.g. SCHÜTTE; ACEVEDO; FLAHAULT, 2018; AHLUWALIA et al., 2017). This has partially to do with different needs and contexts for health and health services that vary from country to country and change over time. Health systems in the Organization for Economic Cooperation and Development (OECD) countries are in a constant state of change and strive to adjust continuously to economic, political and social demands (YAYA; DANHOUNDO, 2015). To respond to the needs of the population, “all health systems are complex and different due to the different combinations of components they can consider” (SCHÜTTE; ACEVEDO; FLAHAULT, 2018). The exact configuration of health systems varies from country to country, but in all cases requires a robust financing mechanism; a well-trained and adequately paid workforce; reliable information on which to base decisions and policies; well maintained

³ http://www.who.int/topics/health_systems/en/

facilities and logistics to deliver quality medicines and technologies⁴.

Another difficulty in assessing and comparing performance of health-systems is a lack of a consistent definition what a high-performing health system is (AHLUWALIA et al., 2017). High performance is in their literature review variably related to different underlying indicators of health systems' performance or a combination of them, including quality (found in 93% of articles reviewed), cost (67%), access (35%), equity (26%), patient experience (21%) and patient safety (18%). Furthermore, Schütte, Acevedo and Flahault (2018) and Britnell (2015) point at practical and methodological difficulties to retrieve, measure and compare health systems' performance through their underlying indicators.

Although there is no consensus on a single best approach to improve performance of health systems, there is a necessity to make health systems more sustainable. First, many Western countries, which already spend 10 to 20% of their GNP⁵ on health care, are nearing the limits of government spending on healthcare they can afford, while the demand for healthcare is still increasing due to ageing populations, shifting disease patterns and technological advances that make new treatments possible. These trends cause that health systems become unaffordable, and therefore unsustainable. Second, there is no evidence that countries that spend more on health care have more satisfied health consumers or better population health outcomes, which points to significant efficiency gaps (YAYA; DANHOUNDO, 2015) and potential for improvement. And third, at best 40 percent of the world population has access to some form of universal healthcare (BRITNELL, 2015). Although forms differ across countries, universal healthcare refers to universal (available to all), comprehensive (access to a full range of medical services) and free at the point of delivery (the ability to reclaim full costs or not pay directly for care received). Since health has been increasingly recognized as a key element of sustainable economic development, global security, effective governance, and human rights promotion (FRENK, 2010), equity in the distribution of health care is essential for a sustainable health system.

The challenge that many health systems face is to become more sustainable in terms of

⁴ http://www.who.int/topics/health_systems/en/

⁵ E.g. <http://www.oecd.org/health/health-systems/Health-Spending-Latest-Trends-Brief.pdf>

affordability, quality, efficacy, efficiency and equity. They need to improve the health outcomes and experience of care of the attended population, while containing the costs to achieve them. The goals of health systems to provide good quality (quality) health care for all (efficacy and equity) at affordable costs (affordability, efficiency), are interdependent and in improvement initiatives one should consider them in an aligned and integrated way. Berwick, Nolan and Whittington (2008) link these interdependent goals to each other in the so-called Triple Aim of improving the individual experience of care, improving the health of populations, and reducing the per capita costs of care for populations. The Triple Aim framework can be considered as a strategic organizing principle, originally proposed to be used by health care practitioners, researchers and policy makers for evaluation of improvement plans and initiatives at organizational or local community level. However, since 2008 the Triple Aim definitions and framework have also been adapted for use at health system level as well. In essence, the use of the Triple Aim framework at health system level does not need to be different than its use at organizational or local community level (MERY et al., 2018). The main difference between the application of the framework at organizational or health system is a stronger focus of health systems on reducing health inequalities among the attended population than in single health organizations. Single organization may attend only a part of the population in the health system or address a specific part of health care. Health systems have a responsibility in protecting the most vulnerable members of the population.

Comparable to the Triple Aim framework, Michael Porter and Elisabeth Teisberg (2006) call for a re-definition of competition in health care, where payers should contract care providers that add most value in health care, where value is defined as the best health outcomes at the lowest cost over time. Care providers that succeed in adding this value, will provide better care to their patients, will become more competitive and will be contracted for a larger volume by payers. Consequently value-based competition should contribute to more sustainable health systems. In a similar context, Porter and Lee (2013) outline a strategy that guides care providers to move to a high-value care delivery system. This strategy is more extensively discussed below.

In this research project the assumption is made that management innovations in and between organizations that deliver better health outcomes and patient experiences for the attended

population relative to the costs to incur them (PORTER; LEE, 2013) also contribute to more sustainable health systems. The results at health system level are seen as the sum of all results achieved by underlying health organizations. The choice for a focus on management innovations in and between single organizations, implies that validation to what extent the management innovations contribute to the equity principle of a fair distribution of health outcomes among the attended population in the overarching health system is beyond the scope of this study.

Focus on management innovation

Increasing demands for health care services, variations in access to and quality of health care services and limited financial resources in many health systems urge to achieve better results with less resources. New technologies enable better solutions, but are also causing a large part of the growth in health expenditures. To be effective and cost-efficient new technologies have to be embedded in different organizational settings. It is management innovation, that is the invention and implementation of a management practice, process, structure or technique that is new to the state of the art and is intended to further organizational goals (BIRKINSHAW; HAMEL; MOL, 2008), that leverages the impact of new technologies in health care, but also has a strong impact on its own on how health care today is organized and results are achieved. As its role is gaining importance in making health systems sustainable, this study therefore focuses primarily on the role of management innovation.

Value Based Health Care as 'proxy' to study management innovation in health care

This research project uses Value Based Health Care (VBHC) 'as a proxy' to study the role and impact of management innovation in health care organizations and health systems. VBHC is a management strategy or philosophy, originally developed by Michael Porter (PORTER; TEISBERG, 2006) that aims at creating better health outcomes and better patient experiences that matter to the attended population relative to the costs to achieve these outcomes. This trade-off between the better outcomes and costs is labeled 'value'.

In a formula:

$$\text{Value} = \text{Outcomes} / \text{Costs}$$

The value increases if outcomes improve and/or costs decrease. The assumption here is that management innovations in health organizations, which create value, contribute to more sustainable health systems.

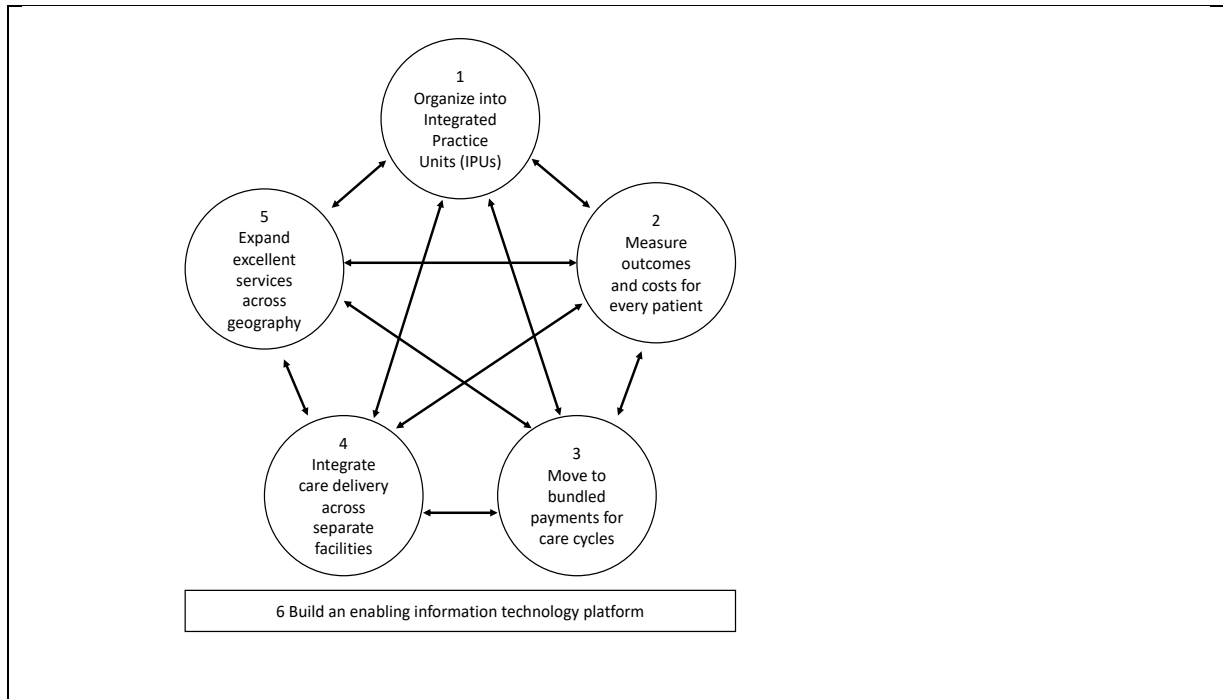


Figure 1 - The Value Agenda

Source: PORTER; LEE, 2013, p.4.

To create 'more value' in health organizations, Porter and Lee (2013) propose a strategic agenda to move to a high-value health care delivery system that consists of six interdependent and mutually reinforcing components:

1. Organize health care around patients' medical condition rather than physicians' medical specialty: Care is delivered by a dedicated, multidisciplinary team of health professionals who devote a significant portion of their time to the medical condition. Care providers see themselves as part of a common organizational unit. A physician team captain or a clinical care manager oversees each patient's care process. The team takes responsibility for the full cycle of care for the condition, addressing the continuum from promotion, prevention, cure and care, and rehabilitation. Patient education and participation are integrated into care. Care is located in dedicated facilities.

2. Measure costs and outcomes for each patient: Measuring outcomes and costs and comparing the performance with peers inside and outside the organization leads to rapid learning and improvement. It is important to include in the measurements those outcomes that

matter to patients (patient reported *outcome* and *experience* measures) and that measure several dimensions: the recovery or health-status achieved (Tier 1); the recovery process (Tier 2); and the sustainability of the health outcomes (Tier 3).

3. *Develop bundled prices for the full care cycle:* The payment approach best aligned with value is a bundled payment that covers the full care cycle for acute medical conditions, the overall care for chronic conditions for a defined period, or primary and preventive care for a defined patient population. Well-designed bundled payments directly encourage teamwork and high-value care. Bundled payments decouple direct control of single providers and reward quality over volume.

4. *Integrate care across separate facilities:* If value is to be substantially increased on a large scale, superior providers for particular medical conditions need to serve more patients and extend their reach through the strategic expansion. Integrated care practices organized in hub and spoke structures can multiply productivity many times while improving outcomes simultaneously;

5. *Expand geographic reach;* Through geographical expansion or collaboration with strategic partners in other geographies hub and spoke structures can attend with their expertise larger patient volumes and achieve economies of scale;

6. *Build an enabling IT platform:* A value driven IT platform supports the stakeholders in the integrated way of working in the integrated practice unit.

The six components can be considered a (set of coherent) management innovation(s) that aim(s) to transform health care from a segmented, siloed and fragmented sector to a sustainable sector driven to create value for patients through integrated approaches and collaboration between stakeholders. Nowadays VBHC is a popular concept that gets much attention in the health sector and worldwide many health organizations are discussing or implementing VBHC practices. To explore what management innovations could contribute to sustainability of health systems and what it takes to implement them, this study uses VBHC practices as a proxy to study management innovation. However, implementation may be complex. To benefit optimally from the concept, health care providers need to work together in integrated care networks that cover the health care continuum of promotion, prevention, cure, care and rehabilitation to attend the increasing needs for social and health care services. For optimal results the six interdependent components need to be aligned between the

different stakeholders in integrated care networks. Therefore this study includes a field study focused at the VBHC concept in a pre- and post operative cardiac rehabilitation program in an university medical center in the Netherlands.

Focus on adoption and implementation of innovations

Invention and implementation are the two core elements of innovation. Invention should be seen in a broader perspective. Volberda, Van den Bosch and Mihalache (2014) distinguish different grades of novelty of innovations: new to the state-of-the-art and new in the organization. To make health systems sustainable, it is important that new practices and innovations that contribute to better health outcomes for the population at lower costs, are adopted and implemented at a larger scale. As in a connected world, good ideas spread fast, it is more likely that a novelty that an organization adopts and implements, was developed elsewhere. Although these new practices may contain a promise of health outcomes at lower costs, the challenge for many organizations is to adopt and implement the concept locally. Therefore, the main focus of this study is targeting at how individual organizations and health systems adopt and implement management innovations that are new to them and their environment.

Focus on the mechanisms that drive or impede change

Implementation of new practices in health care has many similarities with implementing complex change processes, also referred to as transformation, in organizations. In both situations similar difficulties come along the change process: lack of understanding for the new way of working, distrust, skepticism, emotions and resistance, both within the organization and its environment. Therefore, this study also explores insights from organization and change management studies that may help understand better the change processes and underlying mechanisms that drive or impede management innovation.

Methodology

Framework

The five research sub-questions are interrelated. The framework in figure 2 schematizes how both in theory and practice the role of management innovation in making health systems sustainable is studied and explored in this project. The framework follows the research questions.

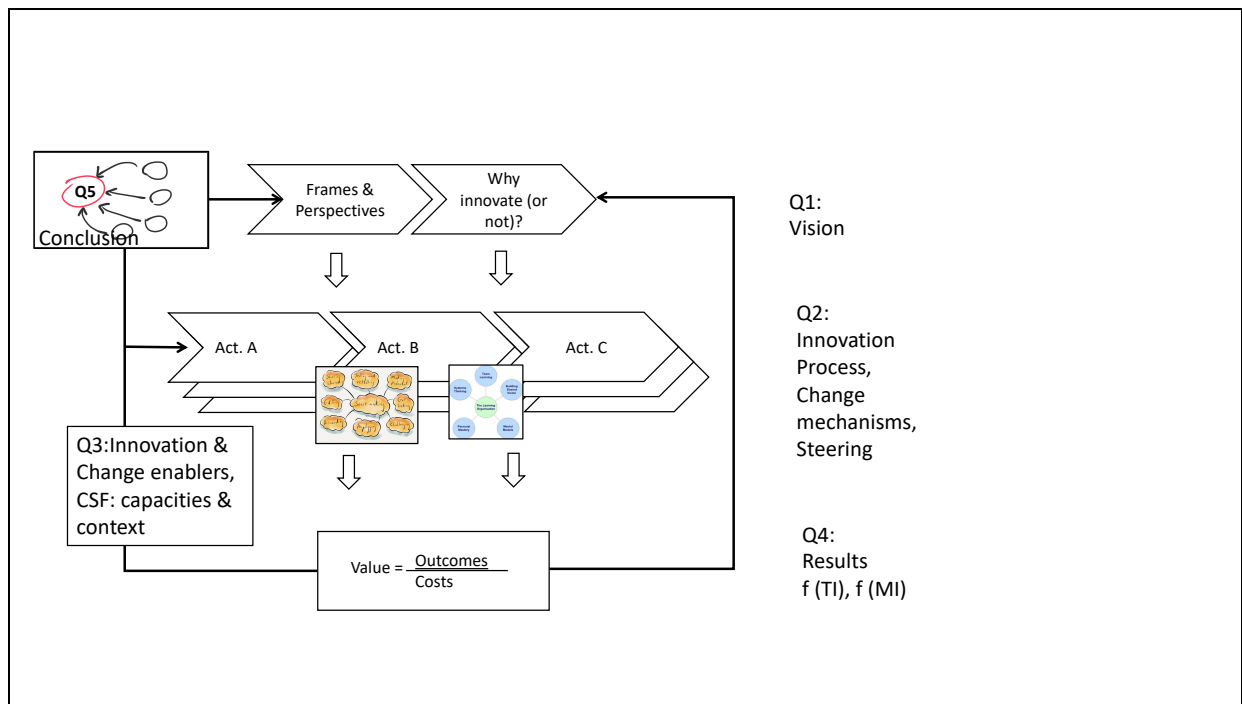


Figure 2 - Theoretical framework

Source: Self elaboration, 2018

First, the stakeholders' perceptions of innovation in health care are addressed to answer the first research question. Their vision on innovation and how they frame the relevance and impact of innovation in health care in general and what innovation means for them and for their work, may give them an interest and reason to engage in innovation, or not. Subsequently how the innovation process evolves from the motivation to the idea, adoption and implementation is explored in the second research question. The literature and field studies follow, insofar possible, the different stages and activities of the innovation process. Also, the underlying change mechanisms of sensemaking and organizational learning that may drive or impede the innovation process are explored. The third research question aims at understanding what critical success factors, like capacities and behavior in organizations and

their context, determine that the innovation process takes place and lead to results. In the fourth question is analysed to what extent results of management innovation can be measured. And if so, to what extent can management innovation in health care contribute to better health outcomes relative to the costs to achieve them and hence to the sustainability of health systems. Based on the answers found in theory and practice on the first four research questions, the fifth research sub-question addresses the question how management innovation can be led or steered more effectively and will be integrated in answering the research question in the concluding chapter 4 what management innovation could contribute to more sustainable health systems.

Literature study

The literature review has a broad exploratory scope and aims to get a more holistic and qualitative understanding of the phenomenon of management innovation in health care by exploring and connecting different scientific fields: innovation studies with a focus on management innovation; organization and change management studies with a focus on ‘unplanned change; studies at concepts of value based health care and its implementation in organizations; and implementation science aimed at implementation of new management practices in health care. It should be observed that there exists some overlap between the different academic fields and the fields are all relatively young and arose in the last two decades. The value based health care and implementation science fields have a specific focus on health care, the other fields are not sector specific and also include studies at innovation in health care.

<i>Perspectives</i>	<i>Health care</i>	<i>General</i>
Innovation	Innovation studies health care with focus on management innovation	Management innovation studies
	VBHC and implementation studies of VBHC as a proxy to answer research question	
Change (How to accomplish innovation?)	Complexity and implementation science	Unplanned change management (sense making, organizational learning)

Table 1 - Academic fields explored in the literature review

Source: Self elaboration, 2018

For the literature study peer-reviewed articles from scientific libraries, but also books on innovation and change management, policy-studies, grey-literature and insight from congresses and events on health systems and innovation that I visited over the last years were used, mostly by systematic search on topics and key-words, sometimes more at random following a lead or author that brought new perspectives to the study.

Field research

In order to answer the research questions, qualitative face-to-face interviews were held with stakeholders in and around a university medical center in the Netherlands, who have been involved in the development, adoption and implementation of the pre- and postoperative cardiac rehabilitation program.

As research methodology is chosen for a qualitative and exploratory approach. Interviews as a research methodology have some important advantages to study the little explored and intangible field of management innovation.

First, interviews capture better the subjective points of view and motivations of stakeholders from which they engage (or not) in innovation in health care than desk analysis of strategic plans or other sources could do. Their perspectives on how the innovation process evolves, the critical success factors and the results are likely to inform us about the essential questions in management innovation. The stories of stakeholders will reveal better where the intangible becomes tangible. Second, innovations typically take more years to come into being, and contain especially in the start phase often classified information. Interviews allow stakeholders to look back at the innovation from its inception to present and the why and how of the steps taken. Third, since innovation and change processes are yet far from understood, it is most important to get a more holistic qualitative understanding first before a further in-depth exploration of a specific aspect of management innovation or quantitative research approach would make sense.

1.4. Expected contributions of the study

Relatively few case studies have been done at implementation of management innovation practices in health care. A first expected contribution is to add one case-study in this underexplored field.

A second expected contribution of the study is that the subjective perspectives of the stakeholders involved in the case-study will function as a collective intelligence and inform us better from an inside-out perspective about the essences of management innovation and its implementation process in the real world that we still do not understand that well.

1.5. Organization of the thesis

In this introductory chapter first the topic and relevance of management innovation for sustainable health systems were introduced. Next the research project, its objectives, research question, scope and methodological approach were discussed. Chapter 2 contains a literature review that explores the research (sub-) questions with insights from innovation and change management studies. In chapter 3 insights from the field are discussed in a case-study at the adoption and implementation of a management innovation in a university medical center in the Netherlands. In chapter 4 the insights from theory of Chapter 2 and practice of Chapter 3 are combined in an answer on the research question ‘What is the role of management innovation in making health systems sustainable?’

2. LITERATURE REVIEW

2.1. Introduction

This study aims at exploring how health organizations and health systems adopt and implement management innovations. Nowadays innovation is not only characterized by medical technological innovation in the sector, but maybe even more by process and system innovations that change the way how health care is organized. The changing and increasing demand for health care services and our advanced understanding of health and care, and how it could be organized better, drive these developments. Porter's value agenda, as introduced in Chapter 1, illustrates the search for value driven models of integrated care.

To implement these new practices, health organizations and its employees have to organize themselves and relate in a different way to other health organizations and stakeholders and adopt different business models and ways of working. This complex process is the topic of this research project.

Therefore, this literature review is based on insights from the field of innovation studies, with a focus on management innovations and from organization and change management studies, with a focus on 'unplanned change'.

2.1.1. Management innovation studies

One of the most complete definitions of innovation comes from Crossan and Apaydin (2010, p.1155). They define innovation as follows:

"Innovation is production or adoption, assimilation, and exploitation of a value-added novelty in economic and social spheres; renewal and enlargement of products, services, and markets; development of new methods of production; and establishment of new management systems. It is both a process and an outcome."

In the last 50 years the vast majority of research at innovation has been focused at product and process innovations that follow a more technical imperative. It studies innovation processes that usually follow a more or less linear process in industry in consecutive phases from research and development to production and introduction of the technological innovation in the market by industry.

The innovations that are subject of research in this study, however, relate more to innovations in how health care is organized and delivered in pursuit of the Triple Aim (BERWICK; NOLAN; WHITTINGTON, 2008) of better outcomes and patient experiences for the attended population relative to the costs incurred to achieve them (PORTER; LEE, 2013). Unlike technological innovations, these innovations do not follow a linear development pattern.

The overarching research field that studies organizational innovations is labeled management innovation. Only recently in the last two decades research at management innovation has evolved as there is a “growing realization that innovative approaches to management and organizing drive firm performance” (VOLBERDA; VAN DEN BOSCH; MIHALACHE 2014, p.1246.). Similar to, and in connection with technological innovations, managerial innovations contribute to the effectiveness and competitiveness of firms (DAMANPOUR; ARAVIND, 2012; VOLBERDA; VAN DEN BOSCH; MIHALACHE, 2014; ČERNE; KAŠE; ŠKERLAVAJ, 2016).

Four relatively recent studies (BIRKINSHAW; HAMEL; MOL, 2008; DAMANPOUR; ARAVIND, 2012; VOLBERDA; VAN DEN BOSCH; MIHALACHE, 2014; ČERNE; KAŠE; ŠKERLAVAJ, 2016) have captured the state-of-affairs of the young field of management innovation studies.

The young research field of management innovation is characterized by a pluriformity of labels and definitions that also maintain the research field fragmented. Management innovation is the most commonly used collective term that captures many different concepts and types of non-technological innovation, including administrative innovation, organizational innovation, management innovation, marketing innovation, non-technological innovation, ancillary innovation, open innovation, strategic innovation, business model

innovation, green- or eco-innovations and non-technological innovations (ČERNE; KAŠE; ŠKERLAVAJ, 2016). However, there exists substantial overlap between definitions, conceptualizations and terminology used. The ambiguity in terminology and conceptualizations of the different types of innovation keeps research in management innovation inefficient as it remains unclear what is known yet, where overlaps in research exist and where research could advance on already existing insights (BIRKINSHAW; HAMEL; MOL, 2008; DAMANPOUR; ARAVIND, 2012; VOLBERDA; VAN DEN BOSCH; MIHALACHE, 2014; ČERNE; KAŠE; ŠKERLAVAJ, 2016).

Also the label of management innovation is not undisputed. In a strict sense management innovation could also be associated with what management does. Innovations that occur without management interventions, e.g. self-steering teams, or between organizations or in a sector go beyond the traditional scope of management. Černe, Kaše and Škerlavaj, (2016) therefor propose to employ the term of non-technological innovation. However, Černe, Kaše and Škerlavaj, (2016) also observe that the concepts of product and service innovation, process innovation, business model and strategic innovation also frequently contain elements of technological innovation, which would make the term of ‘non-technological innovation’ not correct or complete either.

Also the term ‘social innovation’ has in the literature frequently been used for what is understood nowadays as ‘management innovation’. A very common used definition of social innovation is ‘innovations at the working place, new working methods or partnerships that lead to innovation in the production process or new products and services. A second definition refers to the social aspects of technological innovation. To adopt the technological innovation, the social setting in society changes. A third definition is a change in society as a consequence of the perceived need to address society’s grand challenges on, for instance, terrains of healthcare, food security and energy (BRUIJN, 2012). Also Volberda and Bosma (2011) employ in earlier work the term ‘social innovation’ to indicate what they later label as management innovation. The connotation of social innovation as being only related to meeting social needs and the not-for-profit-sector bends away the attention from the importance of other business models and ways of working in organizations.

Being aware of the limitations of the term ‘management innovation’ and the fact that management innovations happen beyond organization’s borders at individual level, in and between organizations and in sectors, the term ‘management innovation’ will be used in this

study as it is the most commonly used term in the field and covers best human agency, at all levels to make innovation work.

In this study the management innovation definition chosen was “the invention and implementation of a management practice, process, structure, or technique that is new to the state of the art and is intended to further organizational goals” (BIRKINSHAW; HAMEL; MOL, 2008, p.825.). This definition adds two important components to an almost similar definition of “managerial innovations as new organizational structures, administrative systems, management practices, processes, and techniques that could create value for the organization” (DAMANPOUR; ARAVIND, 2012, p.427). The first component concerns the inclusion of the innovation process (‘invention and implementation’); the second concerns the determination ‘to the state of the art’ to ‘new management practices, processes, structures or techniques’. These two components make the definition of Birkinshaw, Hamel and Mol (2008) a rather complete and broad definition that covers, insofar that is possible, well the broad spectrum of innovations, but also the underlying innovation processes that are at stake in organization and delivery of health care services.

In a narrow sense, implementation of value based health care could be seen as a new organizational structure (the management innovation) to manage the innovation in the (technical) delivery of health care. If applied for improvement of a single care path related to a single health condition, it is merely a management innovation that leads to a single (health) product innovation. In a broader perspective value based health care could also be considered as a new philosophy or strategy that is broader adopted in the organization enabling the organization to attend better their customers’ interests and creating a competitive advantage for the organization. From that perspective management innovation could also be understood as business model innovation. One step further, to sustain performance and competitiveness a continuous stream of different management innovations over time is essential (DAMANPOUR; ARAVIND, 2012; VOLBERDA; VAN DEN BOSCH; MIHALACHE, 2014). Management innovation can provide a long-term competitive advantage as it is as a resource that is valuable, rare, inimitable, and firm-specific. (HAMEL, 2006; BIRKINSHAW; HAMEL; MOL, 2008). The focus of the management innovation studies therefore is more oriented on creating the ability in organizations to employ new management ideas for modifying and improving its structure and processes to enable continuous strategic

renewal and organizational change. In this perspective, the emphasis is more on creating innovation capacity than to generate a single innovation. In this situation a flux arises between innovations that shape the organization and the organization that shapes the continuous stream of innovations. The innovation process, the innovations (products or services) and the organizational capacity constantly reinforce each other. All together, management innovation could be considered a result (innovation), process, strategy or organizational capacity to renew how the organization's work is organized and done. To understand how management innovations evolve, an understanding of a far more complex social process, interrelated to the way in which individuals interpret, act, and ascribe meaning to the world. (McCABE, 2002).

Compared to technological innovations, management innovations take place in a context where subjectivity, ambiguity and uncertainty play a larger role. In the first place management innovations are highly intangible in nature. They are difficult to observe, to define and to identify system borders for (ALÄNGE et al., 1998 apud BIRKINSHAW; HAMEL; MOL, 2008). Second, only few organizations have specialized expertise that seek systematic ways to improve the overall effectiveness and health of the organizations. These attributes cause that potential users of a management innovation may have a lack of reference and expertise to judge and legitimize the management innovator's proposed innovation. The more novel a management innovation is – Volberda, Van den Bosch and Mihalache (2014) distinguish three types of innovations: new to the world; new to the organization, implemented with adaptation; new to the organization, implemented without adaptation - the larger the ambiguity and uncertainty about what the innovation is meant to be. To understand why a management innovation evolves an understanding of the human agency of the innovator is necessary while not losing sight of the dynamics in the institutional context.

The theoretic insights from management innovation studies on rationales and the innovation process of management innovation will be discussed in the next sections.

2.1.2. Organization and change management studies

Implementation of a new practice - that may be not new to the world, but that is new to the organization and its environment - can also be regarded as a change or transformation question. In general, but also in health care, more change projects fail than succeed. More than seventy percent of change projects fail (BOONSTRA, 2000). This is a serious indication that change trajectories are less predictable, controllable and makeable than often thought. An essential element in this study is understanding adoption and implementation of new practices in health care.

Therefore, organizational and change management studies are a second field to learn lessons from in this study. Organizational studies aim at understanding organizations, their behavior, the determinants of this behavior and their governance. Furthermore, organizational studies aim at developing concepts and methodologies for the analysis of organizations and organizational design. Change management is one of the modern currents in the field of organizational studies and aims at understanding change in organizational structures and the way organizations work.

For the purpose of this study, understanding management innovation in health care, insights from change management studies could contribute to better understanding innovation and change processes and the underlying mechanisms that drive or impede change. Both complex change and innovation processes will be subject to all difficulties that come along: lack of understanding for the new way of working, distrust, skepticism, emotions and resistance, both within the organization and its environment.

Another field explored in this literature review are value based health care studies. Value based healthcare can be considered a management innovation in the meaning of strategy. Health suppliers and payors that succeed best in adding most value to customers, will be most competitive, attract a larger customer base and will be an attractive employer.

When implementing the complex value based health care it becomes more a complex change process in a highly complex environment. Therefore, implementation science studies were involved as well. Implementation science is a relatively young field that exists approximately 10 years (BRAITHWAITE et al., 2018), that studies implementation of new management practices in health care. These studies aim at understanding the impact of complexity in the

implementation of new ways of working and organizing. Implementation sciences are also related to forms of unplanned change in the change management literature.

Reading guide

Starting in paragraph 2.2, the next four paragraphs discuss, in the order of the research questions, the insights from the different fields of study in the literature on stakeholders' perceptions what management innovation is, the innovation process, its determinants and results.

2.2. Stakeholders' visions and perceptions of innovation in health care

Innovation is an umbrella term. People and organizations may have quite different perceptions and ideas of what innovation in health care is and what innovation could contribute to their work and the health sector. Moreover, the health sector and its stakeholders innovate at a low pace. Understanding better their vision on and perception of innovation and its process may give insights why the sector is not making progress faster, while it is possible and necessary. Their visions and perceptions will give more context to understand the essence of the problem of slow progress and stakeholders motives and actions to engage in innovation or not.

Although the number of studies that explore stakeholders' perspectives on implementation of various types of new practices in health care is relatively limited and of recent date (e.g. DE KOEIJER; HAZELZET, 2017; NILLSON et al, 2017; HELLSTRÖM et al, 2015; VEENSTRA et al, 2017; KYRATIS; AHMAD; HOLMES, 2014; COLLDEN et al, 2017), their vision on innovation, what it is and what it means for their work, is important as they form together the teams that adopt and implement the new practices. They are the health care professionals who have a fundamental pivotal role in bringing new concepts of integrated care in practice, in direct interaction with patients and other health care professionals in integrated care networks.

The perceptions of stakeholders on innovation in health care that come forward in more exploratory and more specific studies might be far from complete, but create altogether a

clear picture of stakeholders perceptions of new care practices, their principal concerns that help to understand better why they do what they do (DAMANPOUR; ARAVIND, 2012) and root causes why innovation in health care spread at a low pace. Their perceptions contain a kind of collective intelligence to learn from. Understanding the individuals who drive the process [of a management innovation] are fundamental in understanding “human agency in management innovation while not losing sight of the contextual dynamics that are the focus of the institutional and fashion perspective.” (BIRKINSHAW; HAMEL; MOL, 2008, p.)

The stakeholders’ perspectives that emerge from the described studies give a clear picture how the field looks at innovation, its process and where the epicenters of the innovation challenges are situated.

In this paragraph 2.2 the following questions are addressed: What do stakeholders see as innovation in health care in general? And how do they perceive innovation in improvement initiatives they are involved in? What role do their perceptions have on their engagement in innovation? What factors do foster or impede their engagement?

This paragraph follows a bottom-up approach. First light is shed in paragraph 2.2.1 on insights on stakeholders’ perceptions that come from more general exploratory studies at innovation and implementation of innovation in the health sector. Second, the perceptions of stakeholders of value based health care projects - in this study used as a proxy to study the theme of management innovation - are explored in paragraph 2.2.2, followed by a broader look at stakeholders perceptions in the implementation of various different types of management innovations in paragraph 2.2.3. In paragraph 2.2.4 the perceptions of stakeholders from the surveys and case studies are compared to insights from the literature on management innovation and change management.

2.2.1. General insights from studies on innovation and implementation on new practices in health care

Only few relatively recent studies in the literature have explored the perceptions of stakeholders on innovation in health care (ISKE, 2016; ABMA et al., 2016; JANSSEN, 2016) and implementation of various types of new management practices (e.g. DE KOEIJER; HAZELZET, 2017; NILSSON et al, 2017; HELLSTRÖM et al, 2015; VEENSTRA et al, 2017; KYRATIS; AHMAD; HOLMES, 2014; COLLDEN, 2017).

First, the perceptions of stakeholders that come forward in more general surveys and studies that explore why innovation in health care is difficult and goes at a slower pace than expected, are discussed.

A first set of general perceptions of stakeholders on innovation in healthcare that come forward is that innovation is necessary, something positive and often associated with technological innovation.

The studies inform us that stakeholders regard innovation in health care as necessary (ISKE, 2016) and as something inherently positive (VAN DE VEN et al, 1999; JANSSEN 2016).

Innovation is seen as necessary. In a stakeholder survey (ISKE, 2016) among 82 respondents representing various types of stakeholders in the Dutch health system, the stakeholders indicate that they regard innovation in health care as necessary and that they feel responsible and committed to improving quality of care. The client perspective is seen as leading.

Innovation in health care is seen as inherently positive: Janssen (2016) points out at the prevailing innovation logic that innovation “tends to be presented as the pre-eminent solution to many of the major problems our society, economies and health care systems currently face”. Innovation is seen as a panacea or silver bullet, with only positive connotations and without hesitations that innovation might also render disappointing results or results that do not really add value for a sustainable health system. Van de Ven et al. (1999) informs that the positive connotations are related to the fact that an innovation only becomes visible if it is a success. The innovation attempts that fail, remain invisible.

In health care there is a dominance of, preference for, or association with technological innovation in health care: In an exploratory literature study at implementation practices of

technological, process and system innovations in health care, Abma et al. (2016) conclude that there are still hardly examples in the literature that examine implementation of process and system innovations in health care. All innovation studies found in their study, with a scope aimed at (medical) technological, process and system innovations, concern technological innovation. Janssen (2016) points out that there are many definitions and classifications of innovations, but all are related to technology. The usual connotation with social and process innovation is that they are supportive to technological innovation. These innovations are not seen as having a value of their own.

The second more general observation is that, although innovation is seen as positive and important, it is observed that the health sector is not successful in implementation of innovations. They point at difficulties they experience to implement innovations, institutional elements that withhold innovation initiatives and different traditions of different stakeholders in sharing innovations.

Stakeholders indicate that without doubt there is sufficient professional knowledge with regard to the (medical technological) innovation itself (ISKE, 2016). Topics that score low in the survey (ISKE, 2016) concern collaboration, open innovation and implementation of innovation, especially in the step from “proof of concept” to “proof of business”.

Especially complexity and the multi-stakeholder setting have to be addressed in innovation approaches. Stakeholders indicate a *lack of system thinking in a complex multi-stakeholder environment* among the health professionals. One respondent explains: “The caregivers think in individuals (or diseases or tumors etc.). Rarely they see the bigger picture. They do not think in structures and are difficult to manage. (ISKE, 2016)

There is a need to focus stronger on secondary processes. (ISKE, 2016) Innovation can be limited steered, but it should be possible to realize an innovation portfolio and a set of innovation principles with regard to risks, sharing of knowledge, evaluations and dissemination/implementation.

Lack of trust and distances between stakeholders complicate implementation of integrated health system. (ISKE, 2016) A lack of trust causes that stakeholders undertake relatively few activities together, that they do not adopt innovations of others, experience little room for experiments and do not share failures.

Care givers tend to be risk-avoiding. Internal checks and balances aimed at medical risks and external monitoring by the Health Inspectorate makes health professionals being precautionous when evaluating negative aspects of an innovation, holding back adoption medical or process innovations (IBO, 2017).

Initially the 'invention' or inception of the innovation is usually born out of an intrinsic motivation of health professionals, medical staff and managers to deliver qualitatively good care. For various reasons - a lack of competition between suppliers in the oligopolistic health market, insufficient financial and existential necessity of suppliers to compete and payment models and contracts with payors (health insurers, municipalities) that do not remunerate innovations that contribute to more efficient and qualitative better care - let the spirit to innovate escape out of the bottle. If the novelty gets implemented, it frequently remains limited to a proof of concept within the own organization. (IBO, 2017)

Health professionals in (long-term) care and cure (curative medicine) have different traditions in adopting and spreading health innovations. Associations of medical specialties share new knowledge on a national level among their members and have a positive impact on innovation within their specialty. In the care such associations and networks are organized at a more regional level and are often less structured, resulting in a lower pace of diffusion of new practices. (IBO, 2017)

As the perceptions on innovation of stakeholders in the health sector come in this paragraph from general studies that aim to draw the big picture of innovation in health care, it is valuable to explore and compare these views with studies at the implementation of specific new management practices in single organizations or implementation of a single type of new practice in different organizations as well. For that purpose perceptions of stakeholders who were involved in implementations of VBHC practices and other management innovations are discussed in respectively paragraph 2.2.2 and 2.2.3.

2.2.2. Perspectives of stakeholders involved in implementation in single organizations

Value based health care (VBHC) aims at improving delivery of health care and is in this study used ‘as a proxy’ to study the phenomenon of management innovation in health care. Until so far limited research has been done at implementation of VBHC. In two qualitative exploratory studies at implementation of VBHC in European health institutions, De Koeijer and Hazelzet (2017) and Nilsson et al. (2017) interviewed health professionals on their visions and perceptions on the concept of VBHC and on implementation success of these practices. Quite a few insights on health professionals’ visions on and perceptions of VBHC and what it entails for their work and implementation process emerge.

First, value for the patients was experienced as the fundamental drive for implementing VBHC. Health professionals perceive VBHC as an approach to improve quality of life of the patient with the right care at the right time and place (DE KOEIJER; HAZELZET, 2017). Often professionals associate the concept of VBHC with the concept of positive health where health is defined “as the ability to adapt and to self-manage, in the face of social, mental and physical challenges of life” (HUBER et al., 2011, p.1).

A second observation, however, is that health professionals have partial and multiple understandings on what value for patients means and tend to focus on just one of the principles of VBHC instead of applying the three principles of VBHC - creating value for the patients; basing the organization of medical practice on medical conditions and care cycles rather than around medical specialties; and measuring medical outcomes and costs – integrally as the interdependent principles reinforce each other and create value. Nilsson et al. (2017) observe that health professionals tend to focus on measuring medical outcome. De Koeijer and Hazelzet (2017) notice that medical professionals are enthusiastic about VBHC, as they perceive that attention for quality in VBHC care matches with the passion and core values of the medical profession. This enthusiasm gives them energy for the extra mile to implement VBHC. Health professionals have had their share of one-sided cost control and efficiency measures in health care without real attention for quality concerns.

Third, according to the health professionals, VBHC brings two major changes in their work and its organization. The first one is the altering relationship between the patient and the professional in the consulting room. The patient is more involved than before in his treatment and decides together with the doctor on interventions. Furthermore, the use of medical outcome data increases, for instance, by international studies that compare outcomes and indicate what care path is most effective in a certain situation and PROMS (Patient Reported Outcome MeasureS) give direct feedback to the doctor on the outcomes of the intervention. Next to objective medical outcome data, the doctor also has to involve patients' personal preferences and values ('what matters to you?') and involve the patient in deciding which treatment option will be best for him or her. Patients are also more informed and demanding. The doctor might feel trapped in conflictuous situations where traditional medical guidelines indicate other treatment options than are preferred by the patient. There is no longer one single truth. Together with the patient the doctor has to resolve the situation through shared decision making.

The second major change, perceived by the health professionals, is working in integrated care networks around a medical condition or care cycle. Although used to multidisciplinary consultation and multidisciplinary teamwork in and around their departments, physicians have to get used to working in multidisciplinary teams around a medical condition or care path that sometimes crosses organizational boundaries and where they share integral responsibility for the functioning of the care network as a whole. In multidisciplinary team consultations in these integrated care networks, physicians have to relate to physicians of other specialties, but also to other disciplines, like social care, around a patient. They feel that VBHC necessitates and facilitates a conversation among the disciplines in the interest of the patient. The importance of having multidisciplinary team meetings based on equality contributes to breaking down the ranks and stands in traditional hospital cultures. One respondent put it as follows: "if you really want to change and put patients interests and his interests first, then you have to have the courage to move from being a monoparty to a network." (DE KOEIJER; HAZELZET, 2017, p.4). The interviewed health professionals emphasize the importance of preparing and equipping health professionals for their new role in the VBHC era.

Fourth, the health professionals indicated that the implementation process was crucial for successful implementation of VBHC. De Koeijer and Hazelzet (2017) recommend creating a culture aimed at quality and innovation as integral part of VBHC implementation. For sustainable implementation of VBHC, professionals should furthermore be supported by the HR-discipline in developing the necessary skills and behavior that trains and capacitates them to deal better with the situations in consults and conversations with patients where knowledge of medicine and medical guidelines have become subordinated to values that matter to patients, and to have the right attitude, behavior and skills for collaboration in the multidisciplinary team. In both studies was signaled by the health professionals that the implementation process could not be limited to a top-down strategy, but need to provide room “to translate the intention to create value for the patients to fit their previous professional understanding of what actually does constitute value for the patients. The process was not linear but more of an evolution”. And “only when the implementation process had proceeded, could the care process be further developed. These processes gave insights about the total complexity and the need of working together not just in participants’ own departments, but also interdepartmentally, which also implied an awareness of the importance of working with care processes across borders”. “Health care organizations implementing management innovations such as VBHC need to be aware of recognizing the intrinsic drive of health care practitioners, and to understand the complexity in health care itself as well as in the process of implementation.” (NILSSON et al, 2017). Finally, the structure of how health care today is organized in silo’s with corresponding hierarchies and budgets was often seen as frustrating for the implementation process “as this contributed to difficulties in tracking and following patients during the course of the disease when they crossed boundaries between departments”. (NILSSON et al, 2017)

2.2.3. The role of professional logics and vocabulary in implementation of new practices in health care

Research at stakeholders’ perceptions of different types of management innovations demonstrates that different professional logics and vocabulary have an important role in implementation of improvement approaches in health care.

Colldén et al. (2017) interviewed health professionals on their perceptions of three types of improvement approaches (IAs) in health care: lean, patient-centered care (PCC) and VBHC. These three management innovations aim at different concepts of value creation in health care. Lean aims at creating increased productivity through process streamlining, waste elimination and continuous improvement, PCC follows the philosophy that health care should be centered on the subjective needs of the individual patient with an increased recognition of the individuals unique history, preferences and needs and VBHC aims at more integrated approaches of patient's health condition throughout the care cycle.

In order to achieve sustainable long-term continuous improvement efforts, health care managers must combine, prioritize, and/or align IAs into a coherent system. Colldén et al. (2017, p. 449) argue that “the primary cause for innovation implementation failure in health care is the organizational members’ inconsistent or improper use of the innovations”. In essence, these innovations are merely organizational innovations in a context that is dominated by a professional logic. To implement these innovations successfully establishment of a managerial logic is necessary as well. In Sweden, such differences in understanding of the health care system (i.e. logics) between top managers and first-line health care professionals (doctors and nurses) have been labeled managerialism and professionalism.

Discussing with professionals and managers a taxonomy what the three concepts of IA entail, the interviews of Colldén et al. show that managers and professionals have different and partial understandings of the different management innovations. For instance, asked about their perception of value, professionals tend to view value primarily as an outcome that matters to patients (coming forward in and associated PCC and VBHC), while managers view value more as an outcome that fulfills achieving a certain goal (e.g. time to recover) or as a process that is effective and efficient as possible (coming more forward in and associated with Lean and VBHC).

Also previous experience of the professional with PCC, lean or VBHC caused a better understanding of the IA. Discussing more in depth the different types of innovations created awareness among the professionals that the innovations could be seen as complementary and be valuable for their work and organization.

The implication of the existence of different professional logics is that different management innovations may co-exist. However, management should take into account the different logics in the organization when implementing them. Top down implementations in health care are common, but are likely to fail as different professional logics ‘reign’ at the workforce. Therefore, leaving room for local and contextual adaptations and creating a shared vocabulary that makes sense for the doctors and nurses, for instance in a parallel top-down and bottom-up implementation process is essential.

Similarly, in an action based research program at adoption of improvement knowledge in a professional health organization, Hellström et al. (2015) conclude that the first of five critical practices to transform a professional organization, is to establish its own vocabulary that captures the organization’s view on management innovation.

Developing an own vocabulary typically starts at workplace level by small-scale improvements to maintain energy and “everyone’s involvement as a means to reduce complexity and encourage employees’ participation and individual growth”. A first important principle is that the improvement process is organized around the patient. A focus on his interests allows the team to develop shared meanings and goals, while setting aside specific interests of professional or organizational groups. A second principle is that continuous and iterative dialogues maintain everyone connected and organize continuity in further development of the concept. These dialogues allow theorizing and labeling (BIRKINSHAW; HAMEL; MOL, 2008) the concepts behind the management innovation in a local context and in an own vocabulary. This vocabulary goes “beyond labels created by others and relate to professional knowledge in place” (HELLSTRÖM et al., 2015). It is merely a bottom-up process without much interference of top management of the hospital.

A study in the NHS (KYRATSI; AHMAD; HOLMES, 2014) explores how different professional groups have different perceptions and attitudes, shaped in part by health policies and organizational cultures, to validate scientific evidence prior to adopting and implementing a new practice. Clinicians demonstrate a strong preference for science based, peer reviewed, published evidence. Non-clinicians prioritize evidence on costs involved with national and local experiential trials. Nurses tend to use a wide array and various types of evidence and verify their assessment with other groups. All groups cling strongly to experiential knowledge and expert opinions, but they also verify whether evidence makes

sense to themselves. A sizeable part of the different professions say to have difficulties in assessing evidence of new practices. A major cause they say is related to lack of time and knowledge and skills to translate this evidence in current practice. The study also shows that under pressure, everything becomes fluid and everyone seeks a pragmatic and less rigorous way to validate evidence loosening strict approaches, although patient safety remains the main criterium in validation of evidence.

The study concludes that local sense making processes and interrelations between professionals from the different groups enact evidence in practice. Implementation of new practices goes beyond top-down linear implementations of new practices based on scientific evidence.

2.2.4. Discussion and conclusions

In this paragraph the perceptions of stakeholders on innovation in health care are related to insights from innovation and change management studies.

Perspectives why organizations engage in management innovation

Various perspectives why organizations may engage in management innovation have been identified in the management innovation literature. The *rational perspective* builds on the premise that management innovations are aimed at making their organizations more effective. Management innovations are sought to solve specific problems. Studies aim at understanding adoption and dissemination of these innovations and cover the whole range between micro- and macro level (BIRKINSHAW; HAMEL; MOL, 2008; VOLBERDA; VAN DEN BOSCH; MIHALACHE, 2014). Studies of the *institutional perspective* aim at understanding the impact of external institutional and socioeconomic conditions and determinants that are favorable to or impede management innovations. The classical institutional school gives no direct consideration to human agency. The neo-institutional school, however, does. Connected to the institutional perspective, is the *fad & fashion perspective* (BIRKINSHAW; HAMEL; MOL, 2008; DAMANPOUR; ARAVIND, 2012) or what Volberda, Van den Bosch and Mihalache (2014) label as “*Theory development perspective*” that studies the interaction of managers that adopt the new management practices and the ‘fashion setters’, often

consultants and scholars that help to theorize the new ideas and disseminate them at other places. The *cultural perspective* (BIRKINSHAW; HAMEL; MOL, 2008) investigates how organizational cultures set management attitudes towards management innovations. The *international business perspective* (VOLBERDA; VAN DEN BOSCH; MIHALACHE, 2014) focuses on the local generation, cross-subsidiary and cross-border transfer and dissemination of management innovations, mostly within multinational organizations.

Looking at the rationale of their innovation efforts, stakeholders in the health care studies say to be aware of the necessity to make health systems sustainable (e.g. ISKE, 2016). Health professionals' drive to do what they do is their commitment to provide good quality care to their patients (e.g. DE KOEIJER; HAZELZET, 2017; NILSSON et al, 2017; ISKE, 2016). In essence, their efforts are driven by rationality, by the need and possibility to provide better care at lower costs. There are not really signs emerging from the studies that stakeholders in health are not willing to innovate.

The IBO-study (2017) shows that novelties are often born out of an intrinsic motivation of health professionals or other stakeholders' need to solve a problem. However, the institutional context of the health sector (e.g. a lack of competition between suppliers in oligopolistic health market; insufficient financial and existential necessity to innovate; and payment models and contracts with payors (IBO, 2017)) sometimes withholds progress.

Modus operandi of health organizations is still the same

Aiming at better outcomes and patient experiences at lower costs, health care is nowadays more organized as an integrated social and care system, for example as in the VBHC concept, enabled by medical technological, but above all by process and system innovation. However, the studies show that the modus operandi of many health organizations tend to be still the same as before, more focused at the single parts than at the (social) system as a whole.

Why does the modus operandi of health organizations not shift?

From the studies at the stakeholders perceptions emerge two root causes why the modus operandi does not shift to new practices and models of integrated care.

The first root cause is that stakeholders may have different interests and perceptions of what the innovation is ought to be. Perception should not only be interpreted as a vision on an organizational concept of a novelty as integrated care or VBHC, but could also be understood as how someone literally sees the world and how someone sees his or her job and role in the whole. Different people, and different types of professionals frame the world differently. Perceptions how we see what we see are formed through citizenship, education and training, work with own professional logics, values and vocabulary in a situated context. These perceptions that served for decades determine through what lenses different stakeholder groups look at health care.

The studies demonstrated that managers follow different logics and see different things than health professionals (e.g. COLLDEN et al, 2017; KYRATSIS; AHMAD; HOLMES, 2014. And among the health professionals we saw different perceptions among doctors, nurses (e.g. KYRATSIS; AHMAD; HOLMES, 2014; DE KOEIJER; HAZELZET, 2017; NILLSON et al, 2017) and also with regard to the uptake of innovation in cure and care (IBO, 2017).

What seems to be at stake in shifting to a new *modus operandi* is that many stakeholders cannot see the bigger picture. The studies at VBHC (DE KOEIJER; HAZELZET, 2017; NILLSON et al, 2017) inform that different stakeholders have partial and different understandings of e.g. the concept of value in VBHC. The connotation with attention for quality is welcomed by health professionals, but in general value is not associated with the original concept of value in VBHC where it is defined as outcomes related to costs per capita. And although not intentional, the consequence of different perceptions of the bigger idea is failure in implementation of the innovation as it is ought to be. Systems thinking, that could help to bridge the different perspectives into a shared perspective, seems underdeveloped in health care (ISKE, 2016).

Seeing and understanding health care in an integrated way is not a simple task. Glouberman and Mintzberg (2001a) mention health care as one of the most complex systems known to contemporary society, that consists of four separated worlds (with “cleavages in between”) or silo’s of cure (doctors), care (nurses), control (managers) and community (trustees). The complexity is situated in the interconnectedness of the four worlds through a care process that crosses the silo’s. The four worlds have different status’, follow their own professional logics and reporting lines. Coordination mechanisms are implicitly defined. The doctor cuts, the

nurse cares. The work of the nurse is subordinate to that of the doctor. The doctor intervenes and the nurse takes care of the patient and the logistics throughout the care process. The doctor responds in the first place within the own silo of medical associations of specialist with a hierarchy based upon professional proficiency and professional status. The nurse is employed by the hospital, but reports during the care process to the doctor and formally to the manager in the hospital. The manager in the hospital may be the functional boss of the specialist, but has a strong dependency as the specialist is the one who takes care of the patient. Therefore, enacting a major change affecting the organization or system as a whole and the work of the specialist is not easy. It is complex as many factors interact and determine how is done what is done.

Snowden and Boone (2007) point out that we tend to see fragments and not the system as a whole. What typically happens in a professional environment, is that professionals address situations of complexity as professionals tend to do, based upon (even) more specialist knowledge and with old 'recipes'.

Adopting new practices to achieve integrated care is necessary as the demand for care consists nowadays for a large part of people with chronic conditions, due to ageing often with multimorbidities. Care becomes less centered around medical (super-) specialties and more organized around a (chronic) medical condition leading to shifts in work and status of patients, doctors, nurses and managers (e.g. GLOUBERMAN; MINTZBERG, 2001b). Therefore, it is important to get a shared understanding of new practices in health care and the system as a whole. And to acquire the desired attitude, behavior and culture that enable the new way of working. As Albert Einstein quoted once said: "We can't solve problems by using the same kind of thinking we used when we created them", a different approach is necessary.

The second root cause why implementation of new practices in health care makes slow progress relates to the implementation or transformation approach.

In essence, Berwick (2012, p.761.) explains the problem that "rational common interests and rational individual interests are in conflict [...] and as in all tragedies of the commons, the great task in policy is not to claim that stakeholders are acting irrationally, but rather to change what is rational for them to do".

Understanding the complexity of health care and new concepts of care requires, before and during implementation and work, interaction with all stakeholders to make sense what it is all about. In practice that means using concepts as organizational learning and sensemaking. This already happens, although partially and often implicitly. Organizational learning and sensemaking contain ways of learning by doing and doing by learning. A deeper level of mutual understanding creates among the stakeholders also a willingness to act (SCHARMER; KAUFER, 2013). Next to improving the quality of sensing and sensemaking in organizations, more systems thinking and understanding of principles of integrated care could be taught earlier in life and at school.

The studies at stakeholders' perceptions on implementation of new practices affirm that the dominant approach to implementation and transformation tends to be top-down steering by higher management, employing a step-wise-approach to change under the assumption that the change process follows a linear pattern.

Hospital managers tend to steer primarily targeting hard, concrete factors like strategy, structure and processes. Soft intangible factors, however, cause the transformation to fail. (IDENBURG; PHILIPPENS, 2018).

Van de Ven et al (1999) records in great detail the divergence between assumptions of innovation processes in literature and how innovations evolve in practice.

	<i>Literature implicitly assumes</i>	<i>But we see this</i>
<i>Ideas</i>	One invention operationalized.	Reinvention, proliferation, reimplementation, discarding, and termination.
<i>People</i>	An entrepreneur with fixed set of full-time people over time.	Many entrepreneurs, distracted fluidly engaging & disengaging over time in a variety of roles.
<i>Transaction</i>	Fixed network of people/firms working out details of an idea.	Expanding, contracting network or partisan stakeholders who converge & diverge on ideas.
<i>Context</i>	Environment provides opportunities and constraints on innovation process.	Innovation process creates and constrained by multiple enacted environments.
<i>Outcomes</i>	Final result orientation; A stable new order comes into being.	Final result indeterminate; Many in-process assessments and spinoffs; Integration of new orders with old.
<i>Process</i>	Simple, cumulative sequence of stages or phases.	From simple to many divergent, parallel & convergent paths; some related, others not.

Table 2 - Assumptions and observations about core innovation concepts
Source: VAN DE VEN et al, 1999, loc. 177/5366.

Since Van de Ven's work, scholars of sensemaking and organizational learning (e.g. Weick, Scheiner, Senge) have advanced theoretical concepts that may better explain how transformation and innovation evolve in reality. In practice however, also in health care, many managers sustain linear top-down and command and control driven approaches.

Two main streams of approaches in the change management literature can be distinguished: *planned change* and *continuous* or *unplanned change*.

In *planned change* approaches, management 'designs' an approach of consecutive steps that prepare the change, loosen the old situation ('unfreeze'), change towards the new situation and embed the change in the standing organization ('freeze'). In this 'unfreeze, change, freeze- approach' (LEWIN, 1946) there is a separation between the thinking (management)

and execution (by the rest of the organization). During the execution there is an element of ‘command and control’: management monitors if the change plan is implemented according schedule. This top-down approach of planned change is typically used for more short term, more simple and straightforward changes. Most literature on change management is about planned change (ARMENAKIS, 1999 apud HOMAN, 2005).

According to scholars that study unplanned change (e.g. HOMAN, 2005; WIERDSMA; SWIERINGA, 2002; BOOM, van den, 2007), here lies the problem as well. In practice, change trajectories are less linear and less manageable than theory would make us believe. The separation of ‘thinking’ and ‘acting’ implies a ‘change over’ approach. Management orchestrates the change that primarily affects ‘them’, the people in the organization. Besides new opportunities and excitement, change also brings uncertainty, emotions, fears, risks of loosing a job, power games between ego’s, etc. This often causes different perceptions of what the change ‘is ought to be’ by the people in the organization. And based upon different perceptions, people are the actors that execute the plans that management prepared. Success in the execution of the differently perceived change plan is not guaranteed.

In the studies above, physicians and other health professionals describe how management imposes new practices that they, as they are the ones who bring the new concept in practice interacting directly with the patient, have to execute. They describe that management is led by costs and control motives, not by real interest to make care qualitatively better (e.g DE KOEIJER; HAZELZET, 2017; NILSSON et al, 2017). The new way of working adds up to the already heavy workload doctors experience.

A different approach

A different approach to implementation and change/ transformation management is necessary (e.g. NILSSON et al, 2017; BERWICK, 2016). From the studies emerges that health organizations lack specific knowledge and skills to adopt and implement new practices. They state explicitly that professionals in care organizations, both managers and physicians, have good (medical) technical and professional knowledge. That is not the issue. What is required is an understanding of innovation as part of a far more complex social process, interrelated to the way in which individuals interpret, act, and ascribe meaning to the world (McCABE, 2002).

The studies at perceptions of stakeholders already indicate what they regard as a better alternative to today's implementation practices. At workflow level doctors have to learn to act more in concordance with what matters to the patient (DE KOEIJER; HAZELZET, 2017; NILLSON et al, 2017) and have also to learn how to relate and communicate with colleagues in a network of multidisciplinary stakeholders (DE KOEIJER; HAZELZET, 2017; NILLSON et al, 2017) that may go beyond organizational boundaries.

By interaction with other social and health care givers all stakeholders, including managers, build structural trust and collaboration by multidisciplinary team meetings, participation in experiments, exchange of knowledge, evaluation of errors and sharing them, while developing further a mutual understanding what the new way of working is ought to be, with an own vocabulary capturing a shared vision and values while contributing to a willingness to enact the change through a process where new concepts and logics are locally embedded and enacted. Participation of everyone in small-scale projects (HELLSTRÖM et al, 2015) stimulates health and other professionals to strive for personal growth and learning and contributes to a culture aimed at innovation and support from the HR-discipline to develop the necessary attitude, skills and behavior (DE KOEIJER; HAZELZET, 2017).

The underlying mechanisms of such a transformation approach are referred to as organizational learning and sensemaking processes. Based upon insights from chaos- and complexity theory and social constructivism, scholars of unplanned or continuous change argue that sense making, the attribution of meaning to perceptions, is essential in complex change trajectories. Change does not happen in a vacuum, but emerges in the interaction with other actors in the organization and its local context. These underlying mechanisms are further discussed in the next paragraph 2.3.

Management innovation in health care is ever in progress. It is not a single innovation, but rather a process where the people, aligned with relevant understanding of the system, and their own role in it, form the innovation capacity that drive a continuous process of innovations (DAMANPOUR; ARAVIND, 2012). The innovation capacity constitutes the how of the change. The 'what' emerges from the actions and interactions between stakeholders. Management can steer through facilitating these processes. This is almost the

opposite of how it is done nowadays. Management steers the ‘what’ of the change, forgoing why and how it is done. More of the same is not going to work.

In this context, Simek (2015) explains in his Golden Circle model that people buy the message of the organisation if the why and how of the message is clear to them, they do not buy the message by only knowing the ‘what’ of the message. This idea is grounded in biology of how our brain works.

“The outside of the brain is the Neocortex, which corresponds with the What level of The Golden Circle. The Neocortex is the newest brain or Homo Sapiens brain. It is responsible for all rational and analytical thought and language. The middle two sections, the How and Why, of The Golden Circle make up the Limbic Brain. The Limbic Brain is responsible for all feelings, like trust and loyalty. It is also responsible for all human behavior and decision-making, yet it has no capacity for language. Imposing a change top down by instructions (‘what’) does not drive human behavior. The Neocortex, the thinking part of the brain, is always trying to understand and make sense of the world. This is the reason we think we are rational beings when we are really not. The Limbic System controls our emotions, feelings and decision-making, but it has no capacity for language. We make decisions using our Limbic System and then rationalize that decision with the part of the brain that can communicate with words, the Neocortex.” (SIMEK, 2015)

Final remarks

The transformation process and the underlying mechanisms are usually less a theme discussed in literature on innovation in health care. Compared to technical innovation, management innovation gets much less attention in organizations. Birkinshaw, Hamel and Mol (2008, p.830) observe: “A typical large organization might employ tens or hundreds of scientists with technological innovation skills but few, if any (the closest are organizational development consultants, who seek systemic ways of improving the overall effectiveness and health of the organization”). Only since its first issue of *Implementation Science* in 2006 (BRAITHWAITE et al, 2018) the topic of implementation management and management innovation is gaining more interest from the health care field.

To overcome the Catch 22 situation of a necessity and willingness to innovate in health care and prevailing approaches that seem to let good intentions end in a vicious spiral downward, a focus on the innovation process with attention that improve the quality of ‘sensing’ and implementation in health organizations is elementary. The next paragraph explores further innovation processes and their steering mechanisms.

2.3. The management innovation process

To make health systems sustainable, innovations that contribute to better health outcomes for lower costs are important. In the previous paragraph was observed that the health organisations struggle to develop, adopt and implement management innovations like new forms of integrated care and other new practices that were considered new to the organizations.

Health organizations tend to follow top-down approaches that suppose linear patterns between actions and results. A lack of systems thinking, different interpretations of what integrated care should entail and different professional logics of various types of stakeholders explain why linear approaches of innovation are likely to fail.

Therefore, I explore and discuss in this paragraph concepts from management innovation and change management studies on the innovation process, to answer the following research question:

How do innovation processes with elements of management innovation in health care typically evolve? How are these processes steered? Who is involved?

Reading guide

In this paragraph is first the concept of complexity and what it means for innovation processes explored. Second, a deeper look is taken at the underlying change mechanisms of organizational learning and sensemaking that characterize the self-organizing and emergent character of innovation processes. And finally, the phases through which an innovation typical evolves and their implications and possibilities to lead the innovation process are discussed.

2.3.1. Complexity and unpredictability of innovation processes

Perceptions that health care as a field is extremely complex (e.g. GLOUBERMAN; MINTZBERG, 2001a) and innovation processes are highly complex and unpredictable (e.g. VAN DE VEN et al, 1999; WEICK; SUTCLIFFE; OBSTFELD, 2005; BRAITHWAITE et al., 2018) gain support among scholars.

Many attempts to implement an innovation in health care fail as interventions are based upon a vision that there exists a direct and causal relationship between an intervention and its outcomes. In such a vision, unexpected outcomes are attributed to variation and error in the implementation process and lead to adjustment of the intervention.

Nowadays there is growing awareness that this mechanistic or reductionist view may have worked in the development and implementation of new technologies, but that it no longer realistic in complex, open and social living systems as the health sector is today.

An alternative approach to transform or innovate in health care is to regard health care as a Complex Adaptive System (CAS). Striving to develop forms of integrated and value driven care where the sum of the whole is more than the sum of the parts, the health system as a whole and its local stakeholders form a social network with strong interdependencies and that is characterized by complexity. Complexity is here defined as the behavior embedded in highly composite systems or models of systems with large numbers of interacting components (e.g. agents, artefacts and groups); their ongoing, repeated interactions create local rules and rich, collective behaviors (BRAITHWAITE et al., 2018). Both the health system and the stakeholders exert influence, shape and constrain each other, especially over time (SNOWDEN; BOONE, 2007). Local relationships and interdependencies among organizational members become paramount to intervention success because relationships are recognized as a primary source of system functioning (JORDAN et al., 2009). The relationships among the many and different stakeholder in and around health systems lead through iterative and interactive processes of learning, sensemaking, improvisation and self-organization to emergence of new patterns and change.

In such a setting of complexity changes evolve through a more probabilistic and stochastic process rather than deterministic and causal (BRAITHWAITE et al., 2018).

Complex systems theory also implies that the living systems are always in a flux and never reach an equilibrium. Equilibrium in a living system is death (DOOLEY, 1997 apud VAN DE VEN et al, 1999). Therefore, stakeholders are likely to approach innovation in health care by a process of trial and error. Do more what leads to positive outcomes and less what leads to negative outcomes (VAN DE VEN et al, 1999). Figure 3 depicts this approach.

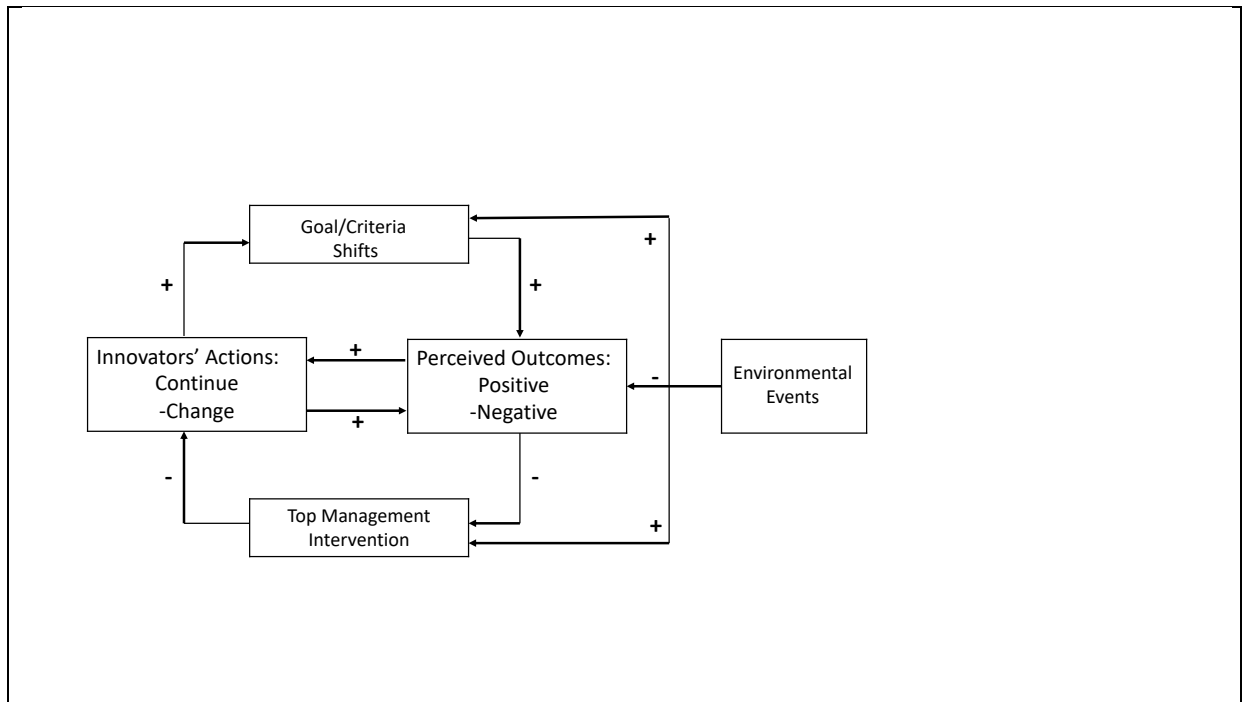


Figure 3 - Learning model to guide the innovation journey
Source: VAN DE VEN et al, 1999, loc. 959/5366.

This approach and its outcomes however might be strongly interfered or offset by internal actions or decisions of the organization self, or by unexpected external events. The consequence is that outcomes remain highly unpredictable, if predictable at all.

A most thorough and empirically grounded understanding of the emerging nature of innovation processes comes from the Minnesota Innovation Research Program where Andrew van de Ven and colleagues (1999) followed, mapped and studied between 1983 and 1989 the processes along which 14 different technological and administrative innovations in different sectors that were new to their environment were developed. Figure 4 summarizes in 12 points typical events that tend to occur in innovation processes, that interfere with and offset action-outcome interactions of stakeholders and that give rise to uncertainty and ambiguity that is inherent to innovation processes.

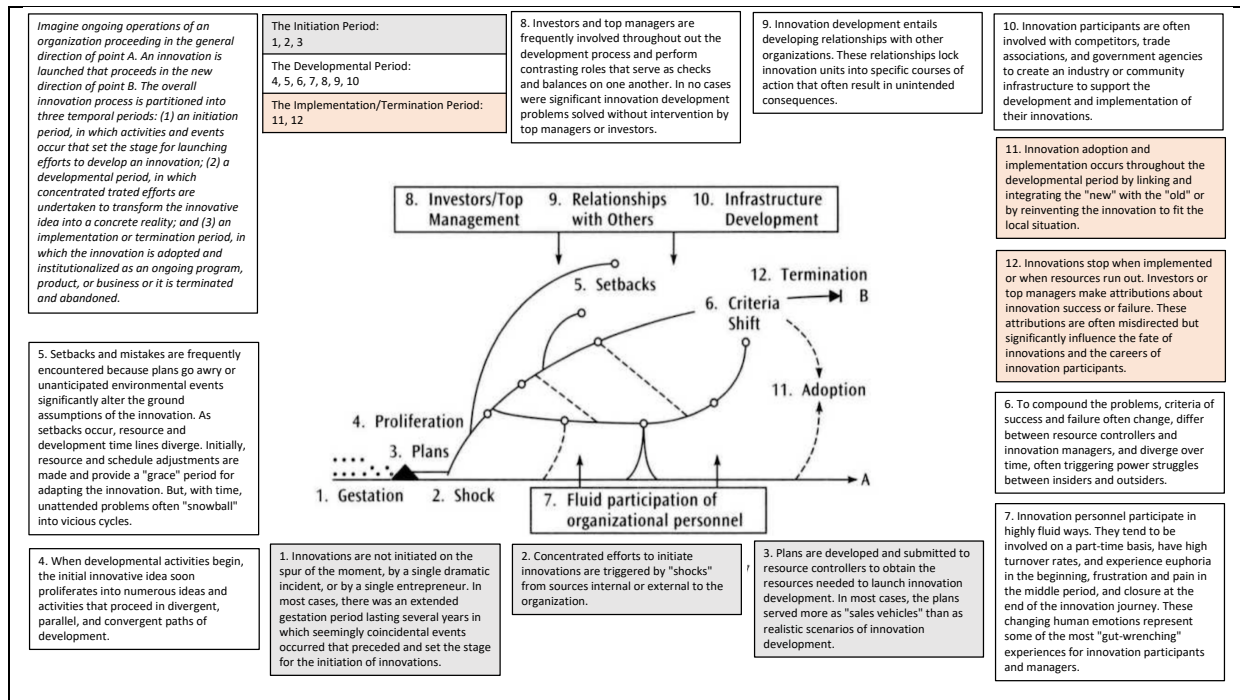


Figure 4 - Key components of the innovation journey

Source: VAN DE VEN et al, 1999, loc. 364/5366.

What can be observed is that, as innovation process progresses, actions and outcomes become more tightly linked through processes of advanced sensemaking, learning and self organizing (see e.g. point 11 in Figure 4). Over the course of time, it is also more likely that random external events decrease, thereby diminishing the uncertainty and ambiguity inherent to the innovation process and leading to a more stable environment. Total stability, however, is unlikely to be reached in living systems, also due to the fact that innovation teams, which make up the innovation capacity of an organization, will constantly look for further opportunities and new ideas to develop their innovation or increase their competitiveness.

Although innovation success remains largely unpredictable, management can increase its odds by learning from experience in trial and error situations. The odds are positively related to smaller size and complexity of the innovation project, the extent to which top management is involved during the whole project, the extent to which the organization is involved in embedding the innovation in its local context and perseverance of the innovation team to make the project a success. The odds are negatively related to novelty and adoption of externally developed concepts without adjustments for its local context.

Before discussing the different phases a management innovation typically passes through, first a deeper look at organizational learning and sensemaking is taken.

2.3.2. Underlying change mechanisms of organizational learning and sensemaking

Today's society has become more complex, more connected and the velocity of changes has increased constantly. Sense making and learning processes are essential for individuals and organizations to keep up with the pace and complexity of the developments in society and to remain competitive.

Organizational learning

To be competitive, an organization should excel in something and be better than any of the competitors. Customers and competitors challenge core competences continuously. To respond to these challenges and stay ahead of competition, organizations continuously need to further develop their core competences that are fundamental to maintain/develop their competitive advantage.

Organizations with the best learning capacities succeed best doing so. Here the capacity to learn is at stake, and especially the capacity to learn to learn. Learning capacity of the organization is the sum of the learning capacities of all the people who work there and what they learn from each other and what they learn together (WIERDSMA; SWIERINGA, 2002). Learning organizations foster the capacities to learn while working together, and foster working together by learning. The organization is developed by collective change of behavior of individuals in the organization, through individual and collective learning.

Learning adds value to the organization if it causes more effective behavior of individuals that adds value to the organizational goals within its specific context. Learning capacities therefor not only involve knowledge, but also skills, courage and will, personality and attitude.

People learn in different ways, through training and education, but also by acting (experience). The learning cycle of Kolb (in WIERDSMA; SWIERINGA, 2002) shows that these learning styles are interconnected in a cyclical process of action, reflection, thinking, deciding, and (new) action again. By action one gets experience, in the reflection phase one considers the experience followed by thinking in which one analyses and conceptualizes the

experience, and consequently one decides over the next steps. In this learning cycle action and reflection are more concrete learning activities, thinking and deciding are more abstract. Action and deciding are more active learning activities, reflection and thinking are more reflective.

Self-knowledge plays an important role in individual learning. It increases someone's learning capabilities. Four layers of self-knowledge (WIERDSMA; SWIERINGA, 2002) can be distinguished. Being aware of what one 'can do' and 'dares' (first layer), of what one 'knows' and 'understands' (second layer), knowledge of what someone 'wants' (third layer) and of 'who someone is' (fourth layer). The deeper the self-knowledge, the more effective someone will learn and act. The person is able to direct himself and is not 'performing tricks'. People in learning organizations consider others as adult individuals that are willing and assuming their responsibility for their functioning in relation to the other and the organization. People value and learn from the differences between them.

Self-reflection is therefor essential for self-knowledge and to understand one's own learning style, vision, way of reasoning, shortcomings and own blind spots. This awareness also creates room and courage to accept that there are more ways to see reality and to act upon it. Research at creativity and innovation demonstrates that reflection enhances both individual and collective learning processes (WIERDSMA; SWIERINGA, 2002).

Like at individual level, there are different layers of collective learning at organizational level as well. The first layer concerns single-loop learning of the rules: 'what 'may' and 'what must'. The second layer is double-loop learning and create 'insights' that contribute to 'knowing' and 'understanding', and the third layer is triple loop learning about 'principles' that relate to of 'what we want' and 'who we are'. Single-loop learning typically results in improvements in organizations, double-loop in renewal, and triple-loop in development. Organizational learning strategies aim at profound triple-loop learning that is closely connected to acting from the core principles of the organization. Schein (1993) refers to these principles as the culture of an organization. Change processes of organizational behavior are self-reinforcing learning processes in which an ever-higher level of proficiency is created over time.

Sense making

The reality in the organizational landscape in the 21st century is complex, pluriform and fragmented. If people talk to each other, an organization changes through the use of core values and collective intelligence (VAN DEN BOOM, 2007). Hence sensemaking contributes to organizing, but organizing is also sensemaking. “Organization is an attempt to order the intrinsic flux of human action, to channel toward certain ends, to give it a particular shape, through generalizing and institutionalizing particular meanings and rule” (TSOUKAS; CHIA, 2002, apud WEICK; SUTCLIFFE; OBSTFELD, 2005, p. 570).

A change in organizational behavior could emerge if people in the organization discuss with each other the different perceptions and meanings they attribute to the reality, as they perceive it. Sense making and meaning are important as they determine what someone does. ‘Facts do not have their meaning written on their faces. Meaning comes only to be in the process of interaction’ (CILIER, 2000 apud HOMAN, 2005). The topics that are being discussed are the topics that matter to the people in the organization, as a person and as member of the organization. Homan labels these topics as ‘islands of sense making’. An organization consists of many of these islands. On these islands people meet and impose their perceptions of reality on the other and learn from the other’s perceptions, and, negotiating with each other, a new collective reality that is valuable to both communities (and the organization) emerges. The perceptions have to be brought together to what is seen both by management and the people as ‘the real and the good’: In what do we believe? (HOMAN, 2005). The ‘real and the good’ become new realities upon which people act.

It is a subtle process of competition and cooperation between people representing different communities in the organization with different perceptions, to deal with each other, competing for the same scarce collective resources (money, attention, time, etc.) in the organization. Scarce resources function here as a creative constraint. Without scarcity all communities would be self-sufficient and would not have a reason to cooperate or compete. Driven by ‘local egoism’ communities need to deal with each other. The change process becomes a generative learning process in which new constructs of reality, that seem plausible and fit the identity of the organization, replace the old. No one orchestrates the big picture of change, but it emerges from many non-planned non-linear local encounters and sense making processes between people in communities that cause complex changes in many small steps.

The different meanings are no problem to the organization, but an asset that catalyzes the sense making process. Ideally the social fabric of organizations that consists of all the relations of and interactions between its members, is sufficient homogeneous to follow a shared direction and to adopt changes in the organization smoothly and sufficient heterogeneous to be receptive for developments and fresh insights from outside the organization.

Change becomes a process of aligning perceptions, creating new realities and aligning ‘thinking’ and ‘acting’. Figure 5 (WEICK; SUTCLIFFE; OBSTFELD, 2005) shows the relationship between enacting, organizing and sensemaking.

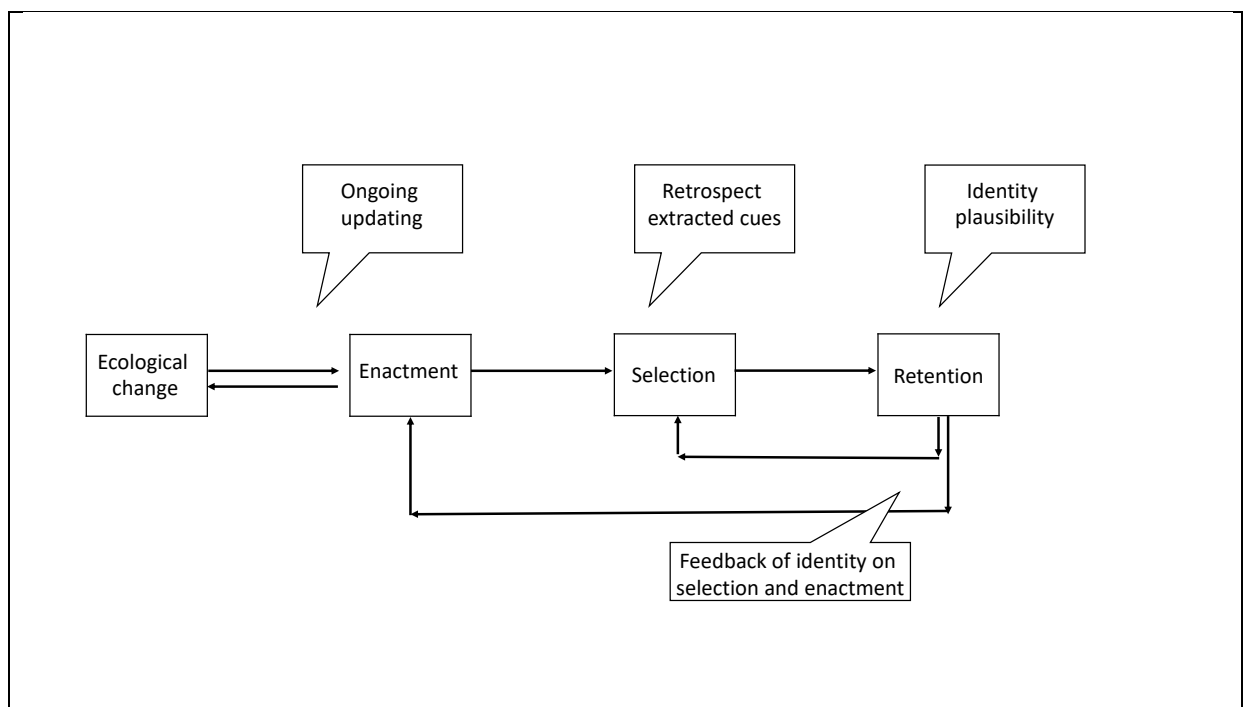


Figure 5 - The relationship among enactment, organizing and sensemaking
Source: WEICK; SUTCLIFFE; OBSTFELD, 2005, p.414.

The majority (75-80%) (HOMAN, 2005) of non-planned changes happen spontaneously. However these changes can also be guided. Contrary to planned change approaches, unplanned change approaches do not aim at defining the content of the change (‘the what of the change’), but focus on the sense making process (‘the how’) through which the content emerges.

Next is explored how and when concepts of sensemaking and organizational learning can be applied in the different phases of developing management innovations in health care.

2.3.3. Phases and main activities in the innovation process

To understand better the process through which management innovation within organizations occurs, Birkinshaw, Hamel and Mol (2008) developed a Management Innovation Process Framework (Figure 6).

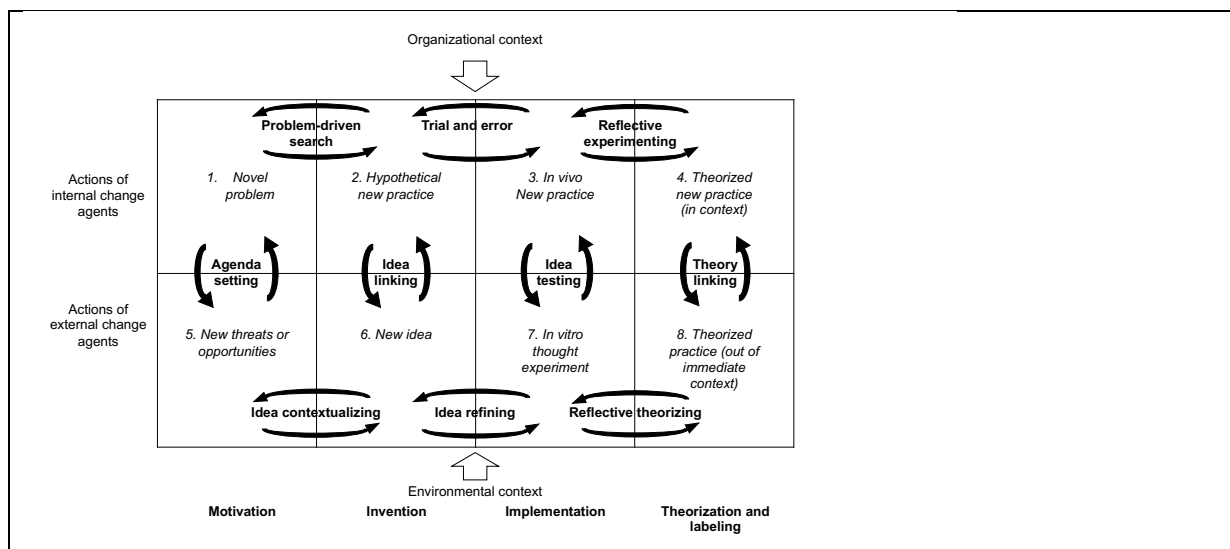


Figure 6 - Management Innovation Process Framework
Source: BIRKINSHAW; HAMEL; MOL, 2008, p.832.

This framework makes it possible to create an organized overview of the different phases of the management innovation process (motivation, invention, implementation, theorization and labeling) in interaction between internal change agents (fed by the organizational context) and external change agents (fed by the environmental context). Following the four phases four internal (1-4) and four external (5-8) actions of change agents can be identified. And between the eight actions, ten, often iterative, types of interactions (core activities in the management innovation process) exist between the actors in different phases and between internal and external actors.

Volberda, Van den Bosch and Mihalache (2014) elaborate further on this framework of Birkinshaw, Hamel and Mol (2008) and propose a multi-level co-evolutionary framework of the Generation, Diffusion, Adoption, and Adaptation Process of Management Innovation. This framework allows monitoring the process through which three different types of innovation (new to the world; new to the organization, implemented with adaptation; new to the organization, implemented without adaptation) could occur and allows for multilevel analysis as changes in the organization affect their environment. “Organizations within a population introduce change through direct interaction or feedback from the system.” (VOLBERDA; VAN DEN BOSCH; MIHALACHE, 2014, p.1251.).

Similar to Birkinshaw, Hamel and Mol (2008), studies at innovations in health care (e.g. GREENHALGH et al., 2004; MINKMAN et al., 2013; IDENBURG; PHILIPPENS, 2018) describe four similar process phases - although with different names- through which organizations typically pass during the innovation process a of management innovation. As pointed out by Van de Ven et al (1999), the processes follow in practice a more probabilistic and stochastic pattern and for that reason can not be captured by strict distinctive phases. The boundaries between the different phases therefore are more blurry and the order of the activities may sometimes be reverse as setbacks occur. The phases are useful though to describe and understand better the main activities and patterns that vary during the innovation process.

First, in the *motivation phase*, people in the organization become at an individual level aware that current practices are no longer sufficient to address the future needs of the organization. This awareness might be triggered by a necessity – e.g. shrinking budgets - or an opportunity – e.g. a new technology - signaled in or outside the organization. These individuals share their concerns and ideas through informal dialogues in a small circle of colleagues. If the idea and concerns are recognized, typically a small coalition of frontrunners, driven by a shared vision, ambition and belief in the idea articulated by their colleague, put the topic on the organizational agenda to explore it further. The initiator and the small coalition are usually intrinsically driven to do what they do, thereby putting long term interests above short-term interests, and common goals above their own. |

To stimulate innovation, it is important in this phase that organizations provide room for initiative, entrepreneurship, growth and ownership to their employees. If highly motivated employees experience no room for such initiatives, they are likely to leave the organization.

The second phase, *the invention phase*, is aimed at further exploration of the idea. A small, formalized, multidisciplinary working or project group, encouraged and supported by the organisation's leadership, investigates the idea and if there is support, enthusiasm and a sense of urgency for the idea in the internal organization. Externally the concept is further explored through market research and analysis of trends. Experiments with the concept are conducted at a small scale in order to test, to reflect on and to learn from. This phase ends with a go- or no-go decision to implement the project based on its feasibility and support within the organisation.

In this phase, it is important that leaders give room, budget and formal support to the initiators and the working group to further elaborate and experiment with the idea. By giving the initiators a formal position in working groups, leaders show their appreciation and encourage initiative taking and entrepreneurial behavior of the initiator signaling in the organization that the initiative corresponds with the values in the organization. Room to connect the internally born ideas with ideas from in- and outside the organization is important to explore and create support for the concept in the own organization.

The third phase concerns the *implementation phase*, in which the management innovation is technically prepared and implemented in the organization. First, management creates awareness, understanding and a sense of urgency by communication at all levels in the organization how the management innovation might fit in the organisation's vision and how it may contribute to the organisation's objectives. Many efforts are done to create momentum and to live up to the moment of the implementation. Management also shows their commitment by swift actions and clear decisions making sure that everything that is necessary for a success is taken care of. Management makes sure that the hardware of the organization, that is its structures, processes and systems that support the new way of working, are in place. They also take care that sufficient capacity of people and other resources are available for the transition to the new way of working.

During and after the implementation things may need a time to settle or cause an additional workload. As soon as people become aware, and sometimes afraid or insecure, that their work is changing, resistance to the new way of working is likely to arise. To prevent people sticking to old work practices, management systematically addresses the bottlenecks and barriers that hinder the new way of working, phasing out the former practices as soon as possible.

In this phase it is important that attention and energy flow to the new work practice and that no ambiguous situations arise where both the old and new practices continue to co-exist. Management makes clear at all levels in the organization that the new practice is a new reality in line with the organizations broader vision on the future and mission.

The fourth phase is the phase of *theorizing and labeling*. People work in the new way. Teams start to collaborate and people get to know each other, finding their way and role in the new practice. The new way of working comes into being by learning by doing and doing by learning. Dialogues between the involved team members create meaning of what the new practice entails and how it fits in their and the organization's vision and values. New values, attitudes and behavior get established by practicing, discussing and where necessary finetuning the new way of working, meanwhile giving support to the people to acquire the desired skills and competences. An own vocabulary that fits within the local context is being developed. The new practice becomes internalized in the organization and adjusted for its local context and needs.

In this phase, it is important that management visibly persists in following the chosen course in line with the organization's vision and values thereby giving room to the teams for organizational learning and sensemaking through which the new practice becomes adopted and embedded. Where necessary, management takes care that initial bottlenecks in hardware as processes, procedures and systems are being resolved to serve the organization to work as is envisioned.

As soon as the newly established practice becomes routine, management may step back a little to let room for further development of the new practice.

2.3.4. Management innovation seen as a self-organizing process

A closer look at the innovation process by the description of the innovation phases shows that the major part of the process emerges from the people working in the organization, without management telling them to do so. It is an individual's or group of individuals' awareness and intrinsic motivation where it starts. Over time, the first idea becomes a new management practice that gets its form, its vocabulary and meaning through interaction among a growing group of people involved with the project. From the individual the idea spreads to the small initial coalition, to the project team who turns it into a new management practice and it gets further shaped by all who work with it.

Management's role is limited and more guiding than directive. In the first phase, management encourages the initial coalition to continue if the idea is congruent with the organization's vision and values. Management gives support, room and resources to explore the idea further. The implementation phase is the most makeable phase. It is directed at developing the hardware and infrastructure that is conditional for the new practice. Management assures that it is done. And in the fourth phase the focus of management is again on letting the self-organizing process do its work while monitoring how the process evolves. Management's role is more aimed at guarding that the organization does not return to the old situation and resolving bottlenecks that prevent progress towards the envisioned new situation.

In summary, the innovation process in organizations is an emergent, bottom-up, non-linear and to a large extent unplanned, self-organizing process primarily driven by soft, intangible factors like receptiveness, involvement, creativity, entrepreneurial behavior, initiative and risk-taking attitude, vision, drive, etc. of the people who work in the organization. Also a culture that stimulates collaboration, trust, communication and teamwork is necessary for people across departments and disciplines to be willing to work together on new practices and to come to a shared understanding of what the concept of the management innovation (e.g. concepts of integrated care) is ought to be for them and the organization. Without all these soft intangible factors the innovation process would neither be ignited, nor brought forward.

Another aspect is the role of external and internal stakeholders in developing a new management practice. External stakeholders, like consultants and scholars are more likely to

bring a fresh look to an organization by brokering concepts that are seen as most progressive and leading in the market. To adopt these externally developed best practices, a sensemaking process in the own organization is necessary to validate the relevance and applicability of the novel practice for the own organization and to adapt it to the specific context of the organization. Otherwise, the chance of rejection of the new practice, because ‘not invented here’, is high.

We saw earlier (paragraph 2.2) however, that in the perceptions of health professionals the innovation process in the health sector tends to be approached in almost the opposite direction.

Rational top-down steering, assuming causal linear action-outcome patterns, dividing work by who thinks (management) and who does (health professionals) does not make much sense. It causes an energy drain to intrinsically driven professionals, leave the silo’s in health care intact and the innovative concepts of integrated care are seen as one more project on top of a too high workload (e.g. DE KOEIJER; HAZELZET, 2017).

However, steering by management on more hard, tangible factors and by directive interventions is also necessary during the innovation process. In the first place during the implementation phase the organization that is about going to work with a new practice needs to be informed at a large scale and needs clarity about structures, systems and procedures. It is also necessary that the resources (budget, capacity, knowledge) are in sync to realize the new practices and its objectives.

Furthermore, management has a function in creating shocks that cause an innovation to move forwards a next level (points 2, 5, 8 and 12 in figure 4 VAN DE VEN et al, 1999), both for the good and the worse.

2.3.5. Discussion and conclusion

Management innovation in the health sector is complex and in nature intangible. The complexity is actually a double complexity. The health sector is one of the most complex sectors (GLOUBERMAN; MINTZBERG, 2001a) and the innovation process is complex

(e.g. VAN DE VEN et al., 1999). Altogether, it is difficult, if not impossible, to determine what causes what when researching innovation in health care. The implication of the complexity is that linear models do not explain the complex reality. Complexity has become a fact of life and we should better deal with it.

The description of the process phases and findings in studies at implementation of new practices in health care show that emergent and self-organizing processes driven by sensemaking mechanisms are at the heart of the innovation process. These processes of learning and enacted sensemaking happen, to a large extent spontaneously, not only in innovation processes, but always and everywhere, in management in health care, but also at home, at school, at work. “They are small actions, but they are small actions with large consequences” (WEICK; SUTCLIFFE; OBSTFELD, 2005, p.419.).

An awareness and understanding of these processes can purposefully be used to benefit of the organization. Management becomes a matter of facilitating and guiding. If negated, these change mechanisms may frustrate well meant, but not effective management efforts.

With regard to management innovation in health care, e.g. when developing and implementing new forms of integrated care, principles of sensemaking and organizational learning can be used to create a shared vision, shared values, and a process in which emerge a shared and systemic understanding of what the specific concept of integrated care entails, what it means for the patient, society, the health sector and work of the health professionals,. By working together on these concepts, from the motivation to the theorizing and labelling phase, old professional and managerial logics become replaced by and converge to new shared logics. As consequence, this process furthters mutual understanding, trust and collaboration between the various types of stakeholders in and sometimes beyond the organization. Once on the same page, their joint efforts and insights – a joint intelligence making up the innovation capacity within the organization - might bring the management innovation to new levels, beyond how the management innovation was ought to be. New practices evaluate over time by enacted sensemaking.

Research at implementation of management innovation in health care is still a young and somewhat fragmented field. Only relatively recent, implementation science studies inform the field about the impact of self-organizing processes in health care transformation, which seems fundamental to advance our understanding of innovation in health care.

There are many factors that may have a positive or negative impact on innovation in healthcare. Amongst others, system antecedents (structure, absorptive capacity for new knowledge, receptive context for change), characteristics of the innovation (relative advantage, compatibility, low complexity, trialability, observability, potential for reinvention, fuzzy boundaries, risks, task issues, nature of knowledge required, technical support) and qualities of the innovators (tension for change, innovation-system fit, power balances, assessment of implications, dedicated time and resources, monitoring and feedback) (GREENHALGH et al., 2004). These factors – whether they are favourable or not – can only exert an influence on innovation, if the innovation process is enacted. These factors contribute to how and what we see, but we have to look first to know what we see. In other words, the innovation process is where the innovation, or we should say the innovation capacity that generates innovation in a continuous process, comes into being.

The insights on the innovation process and reflection on how innovation processes tend to be organized, help us to understand better why we have booked little progress in management innovation in health care until so far.

The next paragraph explores in more depth the factors that may enhance the innovation process in and between organizations and in society and if and what is necessary to further innovation in the health sector.

2.4. Critical successfactors for management innovation

After exploring the innovation process, this paragraph is aimed at understanding better the factors that enhance or impede the innovation process to emerge. Since management innovations in concepts as value based health care or population based health care, may involve collaboration of multiple stakeholders this research question is addressed at organizational level and at the level of eco-systems and society. The following questions are

addressed: What factors determine the behavior and innovation efforts of stakeholders in organizations, between organizations and in the sector? Is it an autonomous process driven by entrepreneurship? How can innovation eco-systems and public policies leverage the innovation efforts?

Reading instructions

This section is structured as follows. First is discussed in paragraph 2.4.1 what drives management innovation in organizations. In paragraph 2.4.2 is explored what factors drive organizational change. Paragraph 2.4.3 gives the perspectives of management thinkers and the health care field how management innovation could be approached best. Paragraph 2.4.4 analyses how change and innovation takes place at eco-system or sector level. Paragraph 2.4.5. discusses the role of public policies in furthering innovation. Finally, in paragraph 2.4.6 conclusions are drawn and will answered what factors further management innovation?

2.4.1. What drives management innovation in organizations?

The majority (75-80%) (HOMAN, 2005) of non-planned changes happen spontaneously. In the previous paragraph was analysed that management's role in innovation processes is a limited, more guiding role aimed at creating the conditions under which the emergent innovation process can take place. Visions, values, attitudes and behavior of people involved determine if they really interact with each other and if the process of sensemaking through enactment can take place.

INSCOPE 's Competitiveness and Innovation Monitor (VOLBERDA; BOSMA, 2011) identifies four determinants of management innovation⁶ in organizations: Dynamic management, flexibility in organizing, smarter working and co-creation. Dynamic management concerns an informal, reflective style of managing aimed at inspiring employees and furthering a climate aimed at learning. It contributes for 22 percent to the effect of management innovation. Flexibility in organizing (20% of effect on management innovation) concerns the ability in the organization to alter the way of working if developments in the

⁶ Volberda and Bosma (2011) refer to social innovation. The label social innovation was in Volberda's later work (e.g. 2014) renamed management innovation.

market require doing so. Another aspect is balancing the focus on efficiency and innovation in the organization. Working smarter (29% of effect on management innovation) refers to stimulating a climate of trust within the organization. Employees are considered important knowledge workers. A climate of trust furthers the willingness amongst employees to share ideas and information, hence generates learning processes. Co-creation (29% of the effect of management innovation) is aimed at working together with other stakeholders. Advantages are many: co-creation generates faster new knowledge and insights, it makes it possible to share expensive R&D costs and the stakeholders strengthen each other with complementary capacities. These four practices of ‘managing’ the management innovation capacity of an organization are interrelated and leverage each other. Therefore, they have to be applied simultaneously. INSCOPE’s monitor also reveals that co-creation is no common practice yet: approximately 15 percent of the companies (in the Netherlands) co-create. These four management innovation capacities are often referred to as ‘entrepreneurship’ and are fundamental to let innovation processes emerge.

2.4.2. Changing behavior in organizations

Ajzen (1991) explains in his ‘Theory of Planned Behavior’ that three factors determine the readiness of someone to change his behavior: willingness (attitude), necessity (subjective norm) and ability to change (perceived behavioral control).

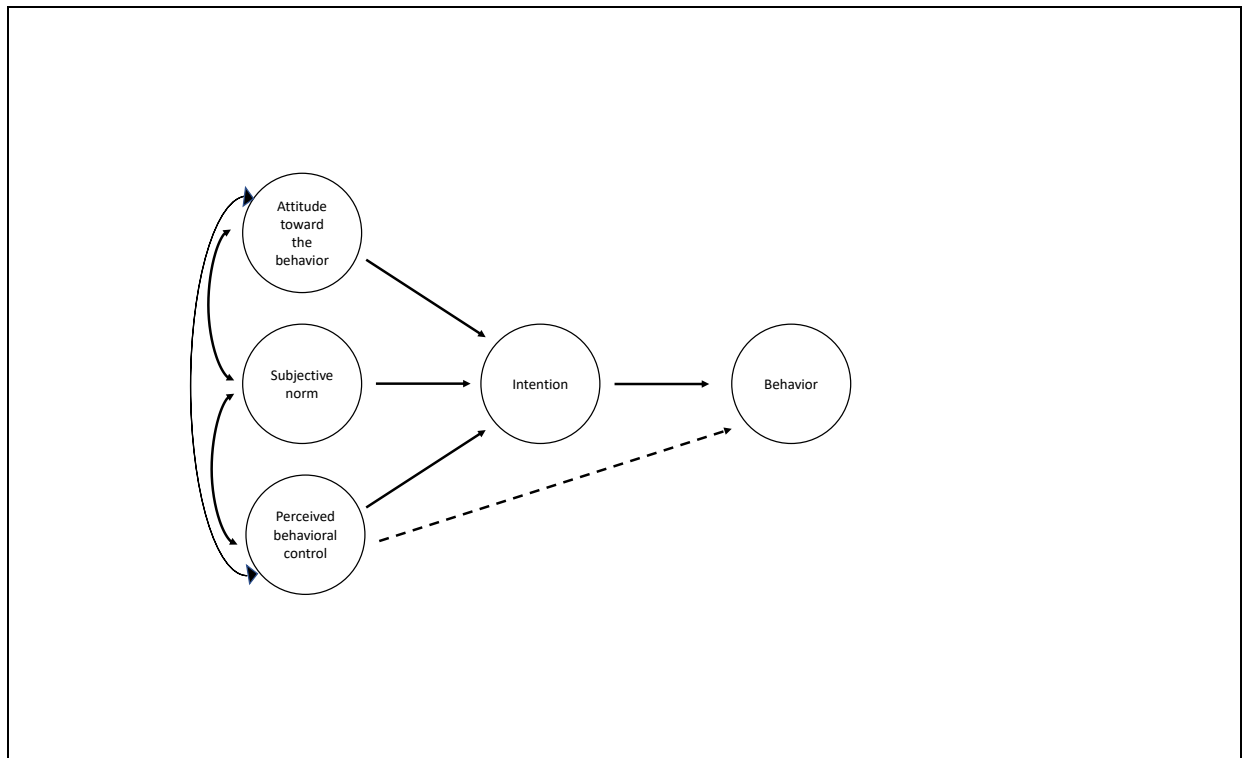


Figure 7 - Theory of planned behavior
Source: AJZEN, 1991, p.182.

The *willingness to change behavior* is related to perceived consequences for someone's work, emotions evoked by the change, added value of the change for the organization and involvement with the change.

The *necessity* has to do with experienced internal or external pressure to change. And the *ability to change* is related to knowledge and competences of someone and the extent to which someone experiences to be in control during the change. This ability is influenced by factors like knowledge and experience, the change approach, availability of information concerning the change, the change capacity of the organization, the manageability of the change, timing of the change, complexity of the change.

With the Dinamo diagnosis model Metselaar (2018) has statistically ranked over the last 20 years these underlying factors that determine the readiness of someone to change his behavior (13= most impact on readiness to change; 1 = least impact on readiness to change):

1. External pressure to change (weight 13);
2. Timing of the change (12)

3. Knowledge and experience of people involved (11)
4. Emotions evoked by the change (10)
5. Involvement with the change (9)
6. Consequences for someone's work (8)
7. The change capacity of the organization (7)
8. The manageability of the change (6)
9. Added value of the change for the organization (5)
10. Quality of the change approach (4)
11. Internal pressure to change (3)
12. Availability of information concerning the change (2)
13. Complexity of the change (1)

A few observations can be made. First, an external pressure causes more acceptance of the change than an internal pressure. Second, emotions (4) weigh heavier than consequences of the change for someone's work (6). This informs us that subjectivity in change processes play a more significant role than we tend to assume and cause more impact on readiness to change than cognitive arguments.

The lowest score for complexity (1) is the only factor in the Dinamo model that is negatively related to readiness to change behavior. This is explained by Ajzen's model that if a change is more complex, people perceive to have little control over the change and tend to forego the change. This observation on complexity in Metselaar's model may explain that people in healthcare tend to be stuck in old behavior as well.

2.4.3. Vision and solutions from the health care field on more effective approaches towards new models of health care

Insights from the literature how innovation in health care naturally evolves and can be guided is in big contrast with the perceptions of stakeholders in the health sector how it actually goes.

Theoretic insights explain the importance of collaboration between the stakeholders in integrated care networks. To do so, they need a shared vision and understanding of what the

concept is all about and how they can work together. This vision and understanding emerges via a bottom-up, often spontaneous, self-organizing process where stakeholders interact and attribute meaning to what they do together. In such a process, health professionals have a pivoting role, in direct contact with patients and other colleagues in the network. By enacting what makes sense to them, the health professionals build trust and a culture aimed at quality and continuous improvement.

Stakeholders, especially health professionals, perceive that in current health practices innovations tend to be top-down implemented, imposed by management. Different understandings of what the concept of integrated care is persist and people, staying in their own silo, work next to each other instead of collaborating. There is limited understanding of and respect for the other stakeholders in the integrated network.

Various scholars, thinkers and leaders in the health sector, articulate a pathway to collaborative approaches to improve the functioning of the sector. Their proposals are in sync with the theoretical concepts of self-organizing processes of innovation and the way behavior changes.

A first element is respect for and a better use of the professionalism and craftsmanship of the health care professionals.

“They [professionals participating in the Delphi study] saw that healthcare professionals“ being at the heart of Clinical Governance (CG) is central to re-establishing ‘ responsible autonomy’ as a basic principle in the performance and organisation of clinical work.” (VEENSTRA et al, 2017, p.5).

[On leadership:]”The more involved, the more knowledgeable, and the more tangibly experienced by the leaders, the better the leadership will be. Economics, the greatest source of leadership at the systems level ...may well be the worst. Economics has no roots in clinical activity of any kind... economists, unlike, say psychologists or anthropologists, have nowhere to go to observe their favored behavior. So this has become a discipline based not on field experience but on quantitative aggregation. ...Healthcare and disease cure are not about detached statistics and market ideologies; they are about caring for and curing individuals. [...] The system requires leaders who appreciate this deep in their souls.” (GLOUBERMAN; MINTZBERG, 2001b, p.82-83)

A second element is the collaboration between all stakeholders in a setting of a smaller, more personal scale creating shared values and understanding.

“The members of our expert panel [in the Delphi study] agreed that “an environment in which excellence in clinical care will flourish” is created by good relationships between healthcare

professionals, managers and patients, by teamwork and by shared values concerning the quality of healthcare.” (VEENSTRA et al, 2017, p.5)

“Shared beliefs emerge from and reflect social consensus, which stems, not from bargaining and compromise, but from a sense of what an excellent service should be.” (GLOUBERMAN; MINTZBERG, 2001b, p.83).

“Doctors and care organizations have always been able to adapt. That adaptive capacity is put to the test by the increased speed of innovation in this digital time frame. Contrary to the changes in recent decades, it is now about the position of doctor and care organization.” (LITH, 2017, p.30)

“In the future digital and physical networks will appear at local, regional and (inter) national level. This not only involves networks around the patient, but also networks between healthcare professionals, both inside and outside the walls of the hospital. The lines will disappear and specialisms will merge.” (LITH, 2017, p. 30)

“Small is not necessarily more beautiful, but it is usually more personal. And it enables wise judgment to take the place of impersonal numbers in the assessment of performance. Trust begins with being able to trust our own instincts.” (GLOUBERMAN; MINTZBERG, 2001b, p.82).

The patient is an important stakeholder as well. Health care should put the patient central and where patient preferences are in conflict with guidelines or professional knowledge of the physician, the patient has a final say in shared decision making:

“Young doctors should be trained to value citizenship over professional prerogative.” “Clinicians, and those who train them, should learn how to ask less, “What is the matter with you?” and more, ‘What matters to you?’”

“Physician guilds should reconsider their self-protective rhetoric and policies.” (BERWICK, 2016, p.3).

A third element is establishing a culture that furthers continuous improvement:

“Our findings indicate that the panel perceives CG as an approach that should be part of the culture of the organisation: it is a mindset that sees quality improvement as a consequence of shared values such as ‘openness’ and ‘trust’ and of seeing ‘mistakes as learning opportunities’ Healthcare professionals perceived culture as the natural antecedent of continuous quality improvement, and rejected top-down and managerial approaches to quality improvement. Inline with the literature, this study highlights the importance of a local, bottom-up and practice-based improvement approach.” (VEENSTRA et al, 2017, p.5)

“Improving quality is a better, more sustainable route to financial success than focusing on maximizing revenue” [...] “health care leaders need to view mastering the theory and methods of improvement as a core competence, while payers need to delink reimbursement rates from input metrics that are not associated with quality and drive volume constantly upward.” (BERWICK, 2016, p.2).

“Changing behavior and culture takes time. The ‘pillars’ in health care are currently standing in the way of the changes and need to be resolved. I advocate a quick and far-reaching removal of the pillars of health care. The sense of urgency, vision, leadership and behavioral changes are the necessary

ingredients. The interests of the current directors and care providers do not support change of positions. The steps will be small, while the speed of innovation increases.” (LITH, 2017, p.30)

A fourth element is re-establishing the relationship, position and mutual respect between health professionals and management:

“We reject this all-consuming ideological dichotomy (between state control and markets) for one simple reason: hierarchies are too crude and markets are too crass to deal with the complexities of health care and disease cure.” (GLOUBERMAN; MINTZBERG, 2001b, p.81)

“A clash between two eras “of professional dominance” [of physicians] and “accountability and market theory” is harming clinicians, communities, and patients.” (BERWICK, 2016, p.1)

“Professionals have to develop greater appreciation of the managerial processes, and managers as well as community representatives have to reflect a deeper understanding of the clinical operations”. (GLOUBERMAN; MINTZBERG, 2001b, p.83)

The proposals for collaborative approaches in healthcare aim at transformation of the health sector. It is essential to be aware that change of organizations starts with small acts of enacted sensemaking at individual level. All these small acts accumulate in change within an organization, in change between organizations and finally in change of a sector. Over time, when more organizations in a sector change, the new practice becomes the new norm and becomes institutionalized, leading to new professional logics and identities as well.

2.4.4. Steering innovation at eco-system and sector level

In management literature on transformations (SCHARMER; KAUFER, 2013; ROTMANS, 2014; GORE, 2013) an evolution can be observed in steering mechanisms and governance models that are used in society. These have developed over the last decades from paternalistic state-centric governance-models (generation 1.0) to a free market model based upon competition (2.0, ego-system), to a social market (3.0, in essence stakeholder capitalism with the network of all stakeholders taking care of externalities of this competition model) and ultimately to an eco-system awareness (4.0) aimed at wellbeing for all based on entrepreneurship and co-creation between knowledge institutes, business, government and the civil society.

The 4.0 eco-system is aimed at better alignment the complexity of today's society and the interests of individuals/citizens, organizations and society as a whole than its antecessors. The 1.0 paternalistic state governance works well in a less complex world and at smaller scales. The entrepreneurship that drive activities of all units in the 2.0 market model works well, but no one takes care of the space between the units. The 3.0 networks take care of the negative externalities of 2.0, but elites use the networks to their individual advantage as well and obstruct reforms of patterns and rules that affect their position. Solutions for complex issues remain often more fragmented and steered from self-interest. With reference to systemic crises in many sectors (for example with regard to environment, healthcare, education) the 4.0 eco-system approaches acknowledge that it is necessary to stop creating results that no one wants (SCHARMER; KAUFER, 2013). Old leadership that created the complex problems, and fragmented approaches of organizations that act as silo's are not going to resolve those.

Instead, the 4.0 eco-system governance model proposes a more holistic approach of the complex problems. It tries to end old dysfunctional behavior and patterns and aims at developing governance models that lead to sustainable solutions and systems for today's and future generations. It invites individuals and organizations to see and act intentionally upon the complex challenges 'from the whole' and from their deepest human values. Entrepreneurial individuals could do in sense making processes what traditional management in organizations does not accomplish. In interaction with others, individuals could first become aware from a deeper awareness level (triple-loop learning (WIERDSMA; SWIERINGA, 2002) or generative listening (SCHARMER; KAUFER, 2013) of the rootcause of the problems, and in the generative learning process, they identify, in interaction with others, opportunities, evaluate them as viable, and then decide to exploit them. Via co-creation (for example using methods as prototyping and design thinking) they develop new solutions aimed at today and tomorrow's needs. Organizations will change through the individual and collective learning processes of their individual members. Organizations change in units of one.

“In a million battlefields, reform of rules and incentives will take place in many areas - markets, political systems, institutions and societies- and will succeed or fail, depending on how quickly individual and collective advocates for a sustainable future will have enough power, skill and determination to find each other and express and realize their hopes and dreams for a better world.” (GORE, 2013, p.379.)

Theory U (SCHARMER; KAUFER, 2013) proposes such an approach that consists of a generative learning journey (U-Journey) aimed at addressing the real needs in society by co-sensing and co-creating.

It remains the question if this 4.0 approach that works on transformation processes from many acupuncture points (SCHARMER; KAUFER, 2013) will be able to overcome the resistance to change of the vested interests in society. However, developments like ageing and a worldwide rise of the middle-class calling for democratic reforms and more sustainable models increase the urgency of profound change. Urbanization (by 2050 70% of the world population lives in cities) and disruptive technologies that are developed anywhere in the world and are spread by multinational companies rapidly, provide new opportunities to address pressing local demands and needs. Given the pace of these developments it is likely that the resistance of the more ego-driven interests of elite groups make space for more sustainable solutions that serve society as a whole (GORE, 2013).

Similar to individuals in organizations who compete for the same scarce resources and act and interact in, often non-linear, sense-making processes, stakeholder groups in ecosystems or society do the same. The same change mechanisms apply. Top down models and command and control approaches are not likely to manage transformation processes well.

Instead, a carefully designed and orchestrated process approach with space for co-sensing and co-creation between its stakeholders could let emerge (the content of the) transformation. In this context, the World Economic Forum (WEF, 2016) points at the potential of public private partnerships (PPP's) to 'leapfrog' towards sustainable health systems. In contrast to the more transaction driven traditional PPP's in which the public entity contracts a private enterprise to execute a certain public activity, WEF suggests stakeholders to let PPP's be more outcome driven, by discussing and defining what problems, seen from the common interest of society as a whole, should and could be solved by innovation through the PPP, what fields of innovation should be included and what the priorities should be. Sense-making processes are essential in bringing the stakeholders together. Especially at the start of a PPP

stakeholders have to understand each other better and learn to work together. WEF shows that all stakeholders are relevant and have indispensable specific competences, but at the same time all hold their biases and opinions on the other stakeholders and the complexity of PPPs. It shows that PPP's in which stakeholders engage 'by choice' (intentional choice to work together) are likely to be more successful than when stakeholders engage 'by necessity'. Once there is a shared awareness and objectives are formulated, next steps are more linear and straightforward and include mapping the ecosystem (who are the most important stakeholders, what is their role, what are the opportunities and threats, etc.), designing the type of eco-system, building the partnership and tracking the implementation. The relationship between the stakeholders is not pre-defined, but is likely to grow and evolve over time.

2.4.5. Public policies

Central in adoption and diffusion of innovations, at organizational and sector level, is the innovation process in which stakeholders meet, discuss and work together on new practices. Through interaction and enacted sensemaking innovations become adopted, brought to a next level and spread in and between organizations, within the sector and society.

Public policies can facilitate the factors that stakeholders are more likely to meet and to know each other, for example by furthering the development of innovation hubs around academic hospitals, faculties of medicine and universities of technology. Next to these organizations, start-ups, multinational companies, private research institutes (usually more focused at ICT, biotechnology, 'hard sciences' for fundamental research and multidisciplinary applied and behavioral sciences) are present in a few square kilometres around the academic hospital. The proximity of the different stakeholders create opportunities for spontaneous encounters and exchange of ideas that may organically lead to joint exploration, collaboration and elaboration of the idea. The health hubs tend to have a main focus on technological innovation and initially not on management innovation aimed at transformation of how health care is delivered.

Congresses and events have a similar function of bringing people together to share knowledge, new insights and ideas.

Furthermore, public policies may further innovation programs in which health care providers (active in promotion, prevention, social care, primary care, secondary and tertiary care, rehabilitation) insurers, government, patient associations and knowledge institutes participate in regional or national pilot projects⁷, financed by the government, with the aim to develop new practices that lead to better health outcomes for the population, better patient experiences and lower health costs. Given the broader interests of better outcomes and lower health costs, the government finances these pilot projects to stimulate participation of all stakeholders in a region. An evaluation two years after the start of large regional pilot project in the Netherlands taught an important lesson: the pilot lead to many steps forward, but results were limited. Analysis informed that the somewhat disappointing results were mainly caused by stakeholders who were hesitating in working together. In their actions they were more lead by short term interests of their own organization than by long term common interests. The distances and distrust between the stakeholders withheld them from enacting the innovations through sensemaking processes.

To formulate effective public policies, policy makers should understand the situations and context in which the factors that enhance the diffusion of innovations are applied. Otherwise well meant policies might turn out ineffective. If for instance, innovative health providers succeed in lowering the volume of health services delivered by novel approaches, e.g. by fostering strategies aimed at healthier lifestyles and prevention, this is a positive result. However, current payment models are based on a volume driven fee-for-service model. Lower volumes would lead to lower income for the health providers while in first instance their organizational infrastructure and costs have to be brought in line with the new practice. To prevent innovators to abandon intrinsically driven innovation initiatives of innovation

⁷ See for example in the Netherlands:

https://www.rivm.nl/Onderwerpen/D/Duurzame_preventie_zorg_en_ondersteuning/Hoe_zijn_de_proeftuinen_vormgegeven

initiatives that render better outcomes quality of care and lower costs, policy makers need to facilitate the transitions by policies and payment models that reward the sought behavior.

Policies may contribute to taking away barriers or give incentives to innovation and diffusion of innovations, but it should be observed that the impact of policies is rather limited and is merely an additional stimulus to create a mindset and readiness of stakeholders to engage in innovation. Innovation emerges through a bottom-up emergent self-organizing process between stakeholders and cannot be imposed or directed by top-down policies alone.

2.4.6. Discussion and conclusion

This research question explored critical success factors that enhance or impede innovation processes. Innovation processes arise bottom-up and have an emergent and self-organizing character. The steering mechanism is an enacted sensemaking process between stakeholders that can only occur if the stakeholders decide to explore an idea or concept that connects them and could bring something valuable for them all. This mechanism works in a comparable way at organizational, intra-organizational, sector and societal level. Governance models are evolving to eco-systems driven by (co-) sensemaking and (co-) creation.

Management innovation capacities (VOLBERDA; BOSMA, 2011) that contribute to a mindset, competences and skills to address in an open and flexible way the needs and opportunities to innovate in interaction with other stakeholders are fundamental to let innovation processes emerge. These management innovation capacities are also referred to as “entrepreneurship”.

Innovation eco-systems augment the chances that stakeholders with a potential shared interest and relevant expertise meet each other. And policies aim at taking away the anomalies in prevailing regulations and financial structures or at stimulating stakeholders to engage in innovation processes if the scope of the innovation is beyond the impact of the single organization.

2.5. Results of innovation in health care

Innovation is not an objective in itself. It only becomes valuable as it contributes to better health outcomes and better patient experiences relative to the costs to achieve these outcomes. Although measuring the contribution or added value of management innovation in health care, here understood as better outcomes at lower costs, is not so straightforward for various reasons, the impact of management innovation on outcomes is further explored in this paragraph. First, is discussed why it is difficult to grasp and measure the impact of management innovation. Second, the impact of management innovation is related to the impact of technological innovation and how these two types of innovations interrelate. And third, by considering some successful examples from different places in the world, the impact of management innovation or at least its potential on its own is explored.

2.5.1. Measuring the impact of management innovation

To measure the impact of ‘something’, it is necessary to define what the ‘something’ is. What is it? Where does it begin? Where does it end? What is understood as impact? Can we measure it?

For various reasons there is quite some variation in what people regard as innovation. In paragraphs 2.2 their perspectives and why they differ among different types of stakeholders were explored. Quite a few of their perspectives or connotations with innovation cause a bias in expected contributions.

The first concerns the connotation that innovation is always something positive. Innovations come only into being when they are a success (VAN DE VEN et al., 1999; DAMANPOUR; ARAVIND, 2012), otherwise the innovation efforts result in failure (ISKE, 2016), often not visible for the outside world. The high expectations of innovations are related to managers’ sometimes wishful expectations of its contribution to growth objectives of the organization’s results. However, only afterwards the results of innovation efforts can be known (VAN DE VEN et al., 1999; DAMANPOUR; ARAVIND, 2012) and especially in the adoption and

implementation phase innovation results are subject to more volatile patterns before they become steadier. Finally, for a more comprehensive assessment of results of innovation also failures should be considered.

Second, the connotation that innovation equals technological innovation was discussed in paragraph 2.2. Many times management innovation is merely seen as having a supportive function to technological innovation.

Third, management innovation is largely intangible by its very conceptual nature. Also the young research field of management innovation with origins in different disciplines and backgrounds and overlap in terms and definitions under different labels make the concept of management innovation difficult to grasp. Management innovations cannot be patented. And few people in organizations are systematically dedicated to management innovation (BIRKINSHAW; HAMEL; MOL, 2008).

Furthermore, complexity inherent to innovation processes and the health sector increases the intangibility of management innovation as actions and outcomes are not interrelated in a linear and causal way.

Fourth, management innovation is rather an innovation capacity (DAMANPOUR; ARAVIND, 2012; VOLBERDA; VAN DEN BOSCH; MIHALACHE, 2014) aimed at organizing a continuous innovation process than a stand-alone innovation. Outcomes cannot be attributed to single innovations, but tend to be a consequence of a series of consecutive historic innovation efforts.

With regard to outcomes, subjectivity and perspectives vary as well. Van de Ven et al (1999) show that outcome criteria and objectives constantly change during an innovation journey. The innovation evolves in a rather unpredictable pattern, thereby constantly leading to adjustments of expected outcomes. And outcomes and plans of innovation projects are rather undefined and emergent. Putting them on paper has merely a function to report to the organization or to acquire commitment and resources for next steps, while what can be expected from the outcomes remains highly uncertain (VAN DE VEN et al., 1999).

To measure outcomes, it is necessary to define the unit of analysis and what is understood as result. In paragraph 2.2 was observed that a concept as value means quite something different for different types of stakeholders. Physicians associate it with outcomes that matter to

patients and quality of healthcare. Managers frame it as monetary value. Value in the VBHC concept (PORTER; LEE, 2013) combines better outcomes and lower costs.

Outcomes can be analysed at different levels: on patient level, departmental level, at organizational level, in the integrated care network, in the health sector or a subsector thereof or beyond the healthsector in society.

Moreover, outcomes become in patient centered care concepts as VBHC defined in a more subjective way and have a temporal dimension. A patient's answer to the doctor's question "what matters to you?" instead of "What is the matter with you?" will vary along different stages of his health or illness condition. The answers will furthermore vary from person to person. For a more comprehensive notion of health, VBHC measures 'three tiers' (PORTER; LEE, 2013) of health outcomes. The first tier outcomes measure direct health status achieved or degree of recovery, like survival and recovered functionality after the intervention or therapy. The second tier outcomes measure the quality of the recovery process, e.g. time to recovery and the occurrence of adverse events during the recovery. And third tier outcomes measure the long term, sustainable effect of the therapy, like the maintained functional level and ability to live independently and the perceived quality of life.

All these factors create different and subjective perspectives of what management innovation is, how it could contribute to organizations' performance and how it should and could be measured. These factors may also explain the methodological difficulties (e.g. VOLBERDA; VAN DEN BOSCH; MIHALACHE, 2014) for research at the impact of management innovation and why research at the performance of organizations driven by by scholar of management innovation is still in its infancy (e.g. DAMANPOUR; ARAVIND, 2012; WALKER; CHEN; ARAVIND, 2015).

The impact of management innovation can only be assessed in its specific context and scope of study.

2.5.2. Relationship between technological and management innovation

Management and technological innovation are interrelated in a dynamic way. Their coexistence and co-evolution lead to firm performance and economic growth (SANIDAS, 2005).

Combinations of new organizational forms that guide, support and interact with technological innovations enable organizations to achieve their objectives (NELSON, 1996 apud DAMANPOUR; ARAVIND, 2012). Various theoretical perspectives affirm the interrelatedness between technological and management innovation. In a resource based view perspective, the synergetic use of an organization's technological and management resources drives its performance (DAMANPOUR; ARAVIND, 2012). From a socio-technical system perspective Boonstra and Vink (1996) argue how the technical and social systems of an organization continuously converge towards an equilibrium with the external environment, where both systems continuously change as they respond to constraints and requirements set by the other system. Consequently, the change in one systems triggers another round of change in the other system, etc. The impact of the two types of innovation can hardly be seen separated, nor would it be desirable. For a sustainable performance of organizations, both types of innovation need to be developed simultaneously.

Walker, Chen and Aravind (2015) are among the first to assess, based on empirical studies, the impact of management innovation on organization's performance. They demonstrate that management innovation positively affects, at par with technological innovation, performance of organizations. Management innovation's performance is even stronger in service driven sectors where innovations tend to follow less a formally organized and technological process, and more a continuous process of numerous incremental changes driven by human capital in an organization. Innovations in service organizations tend to follow more holistic and subjective interpretations of a construct, whereas in the manufacturing industry innovations are merely based on adaptations of one or fewer more objective constructs.

A similar notion of the impact of management innovation is encountered in INSCOPE's Competitiveness and Innovation Monitor (VOLBERDA; BOSMA, 2011) that estimates in a research under 1000 companies in the Netherlands in the period 2005 - 2010 that 25 percent

of their innovation success is due to technological innovation and 75 percent of innovation success stems from management innovation. In other words, management innovation leverages technological innovation success four times. (VOLBERDA; BOSMA, 2011).

2.5.3. Results from technological innovation in health care

Technological innovation in health care has contributed to longer life expectancy with more healthy years. The American National Center for Health Statistics estimates that between 1960 and 2000 life expectancy in the United States increased seven years. Five years (70 percent) of this increase is related to decrease of mortality caused by cardio vascular diseases (CVD) which used to cause half of total mortality.

Advances in the development of new technologies and procedures for CVD are illustrative how advances in medicine and technological innovation have contributed to higher survival rates in the last 50 years. In the sixties the heartlung machine and pacemakers were developed for cardiac and bypass surgeries. Also the discovery that high blood pressure and cholesterol caused atherosclerosis led to the development of new medicines that decrease blood pressure and improve the heart functioning. In the seventies, dotter treatments, advanced surgery techniques that cause less collateral damage and better imaging technologies, like improved X-rays and echocardiography, contributed further to better health outcomes. In the eighties R&D lead to development of stents and more effective medication for high blood pressure and high cholesterol. In the last decade, research has focused on the role of genetic factors that cause CVD and the possibilities for early detection and prediction of diseases and personalized medicine and treatments. In fifty years these merely technological innovations decreased mortality caused by CVD to decrease from half to a third of all mortality and added five years to our lives.

In terms of outcomes the better therapies and treatments in CVD can be considered a success. However, for two main arguments society has to rethink its high expectations of technology as solution for diseases.

The first is that rising health expenses become no longer affordable for society. In chapter 1 we discussed earlier that health expenses in Western societies grow at a higher rate than

GNP. Two thirds of the increase in health expenses is related to new technologies, like medicines, equipment for diagnostics and treatment and surgery robots. The increasing share of GNP necessary for health care is causing conflicts of interest with expenses related to other interests in society, like education, infrastructure, safety, etc. Therefore, health care expenses have their limits. Within these limits trade-offs are necessary what treatments and therapies can be included in the universal basic coverage of health systems and what not. It is beyond the scope of this study to discuss the health technology assessment (HTA) arguments how this trade-off is and could be made. But given the scarcity in resources there is a tendency in health care to include those technologies and services in the universal coverage of health systems that create value, that is, that contribute to better outcomes relative to the costs incurred to achieve these outcomes.

The second argument is that our society thinks fundamentally different about health and disease than 50 years ago. The major part of the demand for health services in Western societies is nowadays related to ageing and chronic diseases. As people grow older, they tend to have one or more chronic conditions. Society has come to insights that these chronic conditions are often caused by less healthy lifestyles and behavior as smoking, insufficient moving, unhealthy diets and stress. Instead of treating disease caused by unhealthy behavior with curative medicine and new technologies, it is far more attractive for society to promote healthy lifestyles and behavior and prevent people from becoming sick. A healthy and vital society is also a more productive society leading to a higher GNP and lower health expenses. Management innovation, innovation in how we understand and organize health and care, may therefore be a valuable complement or alternative to technological innovation to achieve better health outcomes for lower costs.

2.5.4. Results from management innovation in health care

In contrast to technological innovation is management innovation in health care relatively unknown and under-explored terrain (ABMA et al., 2016; SCHAIK; IDENBURG, 2013; TNO, 2013). Actually, this is remarkable as the last ten years concepts as integrated care, value based healthcare (VBHC) and population based healthcare have become dominant

models in our thinking about organizing health care delivery. Although these concepts contain elements of technological innovation, e.g. information technologies and concepts of eHealth that enable exchange of data and information between stakeholders in health care networks, these models are merely based on innovations in organization and management of healthcare.

To address the changing and increasing demand of an ageing population and with a large share of people with one or more chronic conditions (co-morbidities), these models envision the delivery of healthcare through integrated approaches over the continuum of care (promotion, prevention, cure and care, rehabilitation), centered around the need of patients and in collaboration with various types of stakeholders.

In the first part of this chapter challenges that organizations and their stakeholders experience when implementing these new models were discussed. The different perceptions of the concepts among different types of professionals and implementation approaches that did not make sense to stakeholders were the most important hurdles to benefit optimally from these models.

However, if the models are well implemented, management innovation could contribute to better health outcomes and better patient experiences for lower costs. A few examples from all over the world show the potential of management innovation.

Govindarajan and Ramamurti (2013) analyse how the best hospitals in India succeed in offering high-quality healthcare, qualitatively at par with leading U.S. hospitals, for approximately five to ten percent of the U.S. price. The 90-95 percent price difference can not be explained by a difference in salaries of Indian and U.S doctors, which are in India about thirty percent lower, but is merely a result of a six times higher productivity due to three shifts in how health care in the so-called hub and spoke structures in the Indian hospitals is organized. In the first shift hospitals concentrate complex and technology intensive activities to the hub with all expertise, education functions and specialized equipment. And the hospitals move the more routine activities to the spoke facilities that are in general more nearby the attended community. In the second shift more routine activities

move from doctors to nurses and from nurses to e.g. family of the patient. The less expensive nurses and other paramedics are simply better in executing routine tasks than specialists and hence specialists become liberated to dedicate themselves to more complex cases. And the third shift concerns applying practices of lean management.

Buurtzorg⁸ is a Dutch home and community care organization founded in 2007. Innovative in their approach is that the organization works with self-steering teams of 10-12 nurses who attend their clients at home in neighborhoods of approximately 10.000 people. The organization has no management. The idea is that professionals in the team organize themselves. The nurses in the teams have a large professional autonomy but also responsibility, for care of clients and for organizational tasks in the team. In client care, the clients' needs and personal situation are leading. Being able to put clients' interests first motivates the professionals intrinsically and fits well with their professional vision and values. Buurtzorg as organization regards it as fundamental that the professional is empowered to do what is necessary in the specific situation of the client. Top-down steering would not fit, neither would fit delivering only pre-defined modules of care. The nurse develops together with the client and his or her family or informal network a personal care plan and planning along which health care will be provided. Points of attention are discussed in team meetings of the nurses.

As the organization does not need to pay high salaries to management, it is able to attract the best nurses in the market and pay them higher than average salaries. The qualitative good and intrinsically driven nurses take care of every need of the client, both complex and more routine activities, thereby addressing insofar possible the different client needs in one visit. This more holistic and integrated approach has resulted in 50 percent time savings, and 40 percent costs savings, compared to other homecare organizations that send various professionals with different levels of expertise who address each a different client need.

The organizational tasks of the nurses range from finding an office in the neighborhood where they reside to building up contacts with the local GP's and other care providers for collaboration and referrals and the organization of social activities for clients. A central staff department facilitates the teams with an ICT infrastructure that includes a system that

⁸ <https://www.buurtzorg.com/about-us/>

monitors the quality of care provided and keeps track of the client's care process. A limited number of coaches support the teams in the initial phase. A social network of Buurtzorg contributes to sharing expertise among the self-steering teams.

Buurtzorg's results are impressive. From one self-steering team in 2007, the organization has grown to nowadays more than 850 teams all over the Netherlands and is active in over 20 other countries. Client satisfaction rates rank among the highest in the sector. Also employee satisfaction rates rank highest and Buurtzorg has won many awards as best employer in the sector.

Gesundes Kinsigtal is a multidisciplinary health care network since 2005 aiming at developing a population based health care model in rural South -West Germany. The aim of the network was to keep the regional population as healthy as possible, to make the health system less fragmented and to stop health care costs from further rising.

The management innovation was to create a network of collaborating social and health care providers, payors, an integrator and with an active participation of citizens aimed at shared Triple Aim objectives by creating together integrated approaches to health and care in the continuum of health promotion, prevention, cure and care and rehabilitation. A shared savings contract, in which the savings flow back to the participants, finances the new approach.

Their efforts resulted in breaking down silos between the previously different care segments, more collaboration among the local providers with complementary expertises, shared visions and goals, more ownership and entrepreneurship. The focus of the care network moved from treating disease towards more attention for prevention. The network has also involved the active participation of communities of citizens/patients, which fundamentally changed how stakeholders think about health and care.

Nowadays the network consists of 160 collaborating social and health care organization with approximately 500 health professionals (among them 60 GP's and specialists), 33.000 beneficiaries insured by two regional health plans and an integrator that takes care of the administration of the network, analysis of health outcomes and costs, diffusion of these insights and managing the shared savings contract.

Results after 10 years speak for themselves: 40 percent less admissions in mental health care institutions, 10 percent reduction in hospital admissions, 30 percent of the insured population

participates voluntarily in prevention and care programs, 92 percent of the participants would recommend the health care programs to friends and family, participants have an increase in life-expectancy of 1,4 years and health expenses have been reduced with 150 euros (approximately 8 percent) annually per person (IDENBURG; PHILIPPENS, 2018; visit to sister project in Hamburg, 2018).

Except for impressive results, the three examples have in common that the respective organizations have succeeded in creating a shared vision, shared values, ownership and entrepreneurship among the stakeholders. Putting the interests of the patients' first, the objectives of the organizations appeal to the intrinsic drive and professional logic of the people who work there. Different organizational and payment models and supporting ICT platforms enable the new way of working and overcome barriers that withhold many other organizations from doing the same.

2.5.5. Discussion and conclusion

Management innovation remains highly intangible and subjective. It is difficult to measure and it is difficult to unravel in management innovation, that often also contain elements of technological innovation and where many stakeholders collaborate in more holistic approaches of health and care, who or what exactly causes what effect and outcomes.

There are many other examples of management innovation in health care that render similar Triple Aim results of improved health outcomes, better patient experiences and lower costs. These three examples demonstrate that innovations in how we understand and organize health care can contribute significantly to bend the upward slope of cost curves that make health systems no longer sustainable, while also improving health outcomes and patient experiences simultaneously. The costs savings generated by management innovations in these examples are tens of percents, much higher than the costs increases of technological innovation that cause health systems to become no longer affordable.

In these examples the innovations were merely organizational than technological of character, but contained technological elements as well. Both types of innovations are complementary and one type of innovation leverages the other. Where innovation is usually more associated with technological innovation, these examples show that management innovation may be the

type of innovation that could firmly contribute to more sustainable health systems and that management innovation is often wrongly being overlooked.

As health systems are nearing their limits of affordability, choices and trade-offs are necessary to keep or make health systems sustainable. Exploring further and investing in the potential of management innovation may be a wise choice.

3. Rehabilitation before and after cardiac surgery: a case-study at the implementation of a management innovation in a university medical center (UMC)

3.1. Introduction

This case study explores the adoption and implementation of a management innovation, a pre- and postoperative heart rehabilitation program, that aims at prevention of complications during and after elective cardiac surgeries and improving quality of life of the cardiac patients. The surgery takes place at the thorax center in a UMC, the rehabilitation program is situated in a rehabilitation center, that is also part of the UMC.

The University Medical Center Groningen (UMCG)⁹ is one of the eight university medical centers in the Netherlands. At present, the UMCG is one of the largest hospitals in the Netherlands and the largest employer in the Northern Netherlands. More than 10,000 employees provide patient care, are involved in medical education and perform cutting-edge scientific research, focused on ‘healthy and active ageing’.

Patients attend the UMCG for basic care but also for very specialistic diagnoses, examination or treatment. All patients from the Northern Netherlands with complicated or unusual disorders are eventually referred to the UMCG.

Research and education at the UMCG are funded through the University of Groningen (University), and the Faculty of Medical Sciences functions as an integral part of the University.

The UMCG focuses on healthy and active ageing in all priority areas: research, clinical care and education. The healthy ageing-related research is bundled in the Institute of Healthy Ageing. This institute forms the shell in which the healthy ageing activities are embedded, such as the cohort study LifeLines, the UMCG Center for Geriatric Medicine (UCO) and the European Research Institute on the Biology of Ageing (ERIBA).

⁹ https://www.umcg.nl/EN/CORPORATE/THE_UNIVERSITY_MEDICAL_CENTER/paginas/default.aspx

Driven by a focus on healthy and active ageing, the Thorax Center, the cardiac surgery department of the hospital, has approximately three years ago started to offer patients that were undergoing elective open-heart surgery a preventive heart rehabilitation program before and after the cardiac surgery. The rationale of the program is that patients undergoing cardiac surgery are at risk of developing perioperative complications and major adverse cardiac events, mainly related to both their preoperative status and type of surgical procedure. Postoperative exercise based cardiac rehabilitation (CR) is an effective therapy to prolong survival and improve quality of life. In the Netherlands the standard CR program is the polyclinical postoperative program that starts three weeks after the patient is discharged from the hospital.

The innovative practice of the UMC adds a three to six weeks polyclinical pre-operative rehabilitation program to improve the patients physical and mental condition prior to the surgery and combines it with a three weeks postoperative clinical rehabilitation program that starts at the moment the patient arrives in the rehabilitation center after discharge from the hospital. After the clinical program the patient continues his therapy in a polyclinical program for four more weeks. Both the pre- and postoperative rehabilitation program encompass physical therapy, dietary counseling, psychological support and life style management. The rehabilitation center is situated in a suburb of Groningen, six kilometres from the UMC.

The UMC is to the best of their knowledge, the first hospital to combine the pre- and post cardiac rehabilitation program. At this moment three PhD candidates conduct a research program: the so-called Heart-ROCQ¹⁰ study. In this research the effect on post-operative complications, quality of life and return to work of a combined pre- and post-operative CR program are compared to the impact of a regular CR program, which is provided only after cardiac surgery.

¹⁰ Preventive **H**eart **R**ehabilitation in patients undergoing elective **O**pen heart surgery to prevent **C**omplications and to improve **Q**uality of life

3.2. Description research

3.2.1. Introduction and context

Despite the need to transform health systems and implement new best practices, such as VBHC, the health sector is not yet very successful in applying new methods: the best practices are spreading at a low pace (IBO, 2017). Especially our understanding of the adoption of process and system innovations (ABMA et al., 2016), which also includes VBHC, is limited. Schaik and Idenburg (2013) and TNO (2013) point out that with regard to innovation in health care there exists a hidden potential for management innovation that could be retrieved by more 'low tech, high touch' strategies. Research at the implementation of VBHC is also a relatively new research field (DE KOEIJER; HAZELZET, 2017; NILSSON et al., 2017).

3.2.2. Aim of the project

The aim of this research project at the cardiac rehabilitation program before and after the cardiac surgery is to explore stakeholders' perceptions on management innovation in healthcare and to gain insights into how innovations in health care, which contain a large component of management innovation, such as VBHC, are adopted and implemented in health organizations. And who and what are their 'drivers'?

This understanding could contribute to further insights into which steering mechanisms can be used to lead and guide innovation in health organizations and health systems more effectively.

The cardiac rehabilitation program is currently being carried out in collaboration with the cardiology and thoracic surgery department of the UMCG at the Rehabilitation Center, location Beatrixoord.

3.2.3. Research question

My research question is:

What is the role of management innovation in making health systems sustainable?

To answer the research question 5 sub-questions will be answered:

1. Why do we innovate? What are the vision and perspectives of stakeholders on innovation in health care? What is the importance of innovation for their own work / role and in the bigger picture?
2. How do innovation processes (with elements of technological and management innovation) in healthcare usually evolve? Where and in what way do technological and management innovations reinforce each other? How are these processes implemented and controlled? Who is involved?
3. Which internal and external critical success factors determine that an innovation (with elements of management innovation) is successfully adopted?
4. Does this kind of innovation lead to better healthcare outcomes at lower costs? What results are attributable to management innovation?
5. Can the health care sector steer more effectively in the development, adoption and implementation of innovations that make health care systems more sustainable? If so, how?

3.2.4. Methodology

As research methodology is chosen for a qualitative and exploratory approach. Interviews as a research methodology have some important advantages to study the little explored and intangible field of management innovation.

First, little is known about stakeholders' perceptions (e.g. NILSSON et al., 2017; DE KOEIJER; HAZELZET, 2017; VEENSTRA et al., 2017) of management innovation yet. Knowing their perceptions is important for a better understanding of management innovation,

as they are the ones who make the innovation happen in interaction with patients and other stakeholders in integrated care networks.

Interviewing stakeholders who were involved in a successfully implemented management innovation informs us about how the implementation process has evolved and enables us from a 360-degrees inside-out perspective to follow the innovation from vision formation, through the innovation process to results and critical success factors. Their perceptions provide insight into how they 'frame' the innovations and their importance, their motives to commit themselves to the innovation and why they do what they do. Being able to follow from an inside perspective the innovation process from inception until implementation may contribute to fill in the blanks in our understanding of the young and fragmented research field of management innovation (e.g. BIRKINSHAW; HAMEL; MOL, 2008; DAMANPOUR; ARAVIND, 2012; VOLBERDA; VAN DEN BOSCH; MIHALACHE, 2014).

Management innovations are characterized by a high degree of intangibility (e.g. BIRKINSHAW; HAMEL; MOL, 2008; VOLBERDA; VAN DEN BOSCH; MIHALACHE, 2014) and complexity (e.g. VAN DE VEN et al., 1999). Perceptions have an important role in the innovation process. Stakeholders use their subjective interpretation to make sense of what the proposed management innovation is ought to be. Different types of professionals perceive and frame the world around them, their work and their role differently. Management innovations like value based care concepts require, in order to realize the potential synergies of the concept, that stakeholders with different backgrounds develop a shared vision and understanding of the integrated concept and each one's role in the collaboration. Scholars of 'unplanned' change (e.g. HOMAN, 2005; WEICK; SUTCLIFFE; OBSTFELD, 2005) inform us that processes of sense making, if enacted well, could bring the stakeholders and complex organizational concepts together. Interviews in which stakeholders' perceptions are explored provide a rich source of data for exploring how management innovation actually evolves.

Second, innovations typically take more years to come into being and contain especially in the start phase often classified information. Interviews allow stakeholders to look back at the innovation from its inception to present and the why and how of the steps taken.

Third, since innovation and change processes are yet far from understood, it is most important to get a more holistic qualitative understanding first before a further in-depth exploration of a specific aspect of management innovation or quantitative research approach

would make sense. Semi-structured interviews give the opportunity to ‘let the field speak’ and leave room for other related topics to emerge from the interviews than beforehand considered.

The object of the case-study, the pre- and post operative heart rehabilitation program is chosen as it is considered an example of a management innovation that is based on the principles of value based health care and is expected to contribute to better health outcomes and patient experiences relative to the costs incurred to achieve them. It is an example project that aims to contribute to more sustainable health systems. It fits in and contributes to shifting the focus on healthy ageing, within the UMC, but also broader in society. The rehabilitation program is an example of a paradigm shift from a focus on curative medicine for treatment of disease (heart surgeries) towards quality of life (secondary prevention in the rehabilitation center) with large contrasts in type of people who like to work in either the thorax center or the rehabilitation center, each with a very different organizational culture and dynamics. These opposites in various dimensions in both entities contribute to the completeness and complexity of the management innovation that had been implemented. The fact that the rehabilitation program has been implemented successfully and has sufficiently settled in makes it a valuable object for a case-study at management innovation.

In order to answer the research questions, qualitative face-to-face interviews were held with stakeholders in and around UMCG, who have been involved in the development, adoption and implementation of the pre- and postoperative cardiac rehabilitation program. Approximately 120 people in the UMC organization are nowadays directly or indirectly related to the rehabilitation program, most of them working at the thorax center, cardiology department or rehabilitation center. To get a representative 360 degrees perspective on the heart rehabilitation program, 15 people were interviewed. They were selected, approached and invited for the interviews in consultation with the director of the thorax center/principal investigator and the PhD students connected to the HeartROCQ study in order to obtain a representative sample of the stakeholders involved in the rehabilitation program and its implementation. Among the 15 persons, 8 work at the thorax center, 5 at the rehabilitation center, 1 in a general hospital that partners with the UMC in the rehabilitation program and 1 is director in the staff of the UMC. Of the 15 persons are 4 (head or senior) nurses, 2 nursing

specialists, 2 cardiologists, 2 planners, 1 psychologist, 1 dietician, 1 physiotherapist, 1 business manager, 1 policy director. Among the 15 persons were 10 involved in the implementation process and its initial phase, many of them with a key-function for the project's success. Nearly all of the 15 respondents have been working many (on average more than 10) years with the UMC. Nine of them have management responsibilities in their present function.

Two groups of stakeholders were not interviewed: patients and health insurers. Patients, because new privacy regulations would take too much time and complicate obtaining authorization for interviewing them for the case-study. This was no problem as the interviews with the respondent-caregivers shed light on patients' perspectives and enthusiasm about the program. Since the project has been financed with internal available resources of the UMC, insurers have only had a passive, more distant role (limited to authorizing the appliance of the resources for this project) in the development of the heart rehabilitation program. Interviewing them would not add much value.

As part of the preparation of this research project, I (the researcher) had several conversations between January and August 2018 with the Director of the Thorax Center/ the inventor of the cardiac rehabilitation program and the PhD candidates that lead the research program. The PhD candidates were formally not interviewed as the informal conversations with them also contributed to development of the questionnaire for the interviews with their colleagues. Many issues were already discussed with them in the informal conversations. The Director of the Thorax Center was going to be interviewed as well, but three appointments for the interview were cancelled as he was called away for emergencies with patients.

A limited desk study and participation in the first World Congress on Pre-Habilitation¹¹ in June 2018 in Eindhoven, The Netherlands completed the preparation.

The interviews were held in August 2018 at the work locations of the respondents in the UMC and at the rehabilitation center. The interviews were semi-structured and followed a topics list/questionnaire that was guided by the research questions (see annex 1). The semi-structured nature of the interviews permitted to explore, insofar relevant, topics and perspectives of stakeholders more in-depth.

¹¹ <http://www.fit4surgery.nl>

The interviews lasted between 45 and 60 minutes and were held in Dutch. This duration of 45-60 minutes was also the time that was approximately made available for the interviews by the organization, in order to limit time spent on non-care activities at the cost of the care-activities. The interview time was sufficient to complete the interviews.

The respondents were very open to share their visions, perceptions and experiences with the rehabilitation program and its implementation. They were all, without exception, enthusiastic about the program and considered, based on reactions of patients, it a successful example of a management innovation. They appreciated the initiative of the UMC organization to conduct the case-study as a kind of evaluation from an organizational perspective to learn from for similar projects in the future and were curious to hear about the findings. A presentation of results is planned for the end of 2018.

The interviews were all recorded with informed consent of the respondents. The researcher is held to the codes of conduct with regard to privacy and confidentiality of the data obtained in the interviews. Therefore, the oral quotes in this chapter are not related to single respondents, unless necessary.

The interviews were transcribed, coded and analyzed using software for qualitative research (AtlasTI) and a mindmap program (MindNode). The transcribed interviews were re-read by the researcher and selected texts and arguments were coded with codes related to the research questions and underlying sub-themes to be able to group the themes and arguments for purposes of analysis. In the analysis the themes that came forward from the case-study were related to the findings from the literature study.

In total 14 interviews were held with 15 respondents that together gave a complete perspective on the cardiac rehabilitation program and its development. In the last interviews became clear that sufficient saturation in the findings had been achieved. The last interviews provided relatively little additional information and merely consolidated earlier obtained insights.

In the next paragraphs the findings of the case-study will be presented and related to insights from the literature study. The paragraphs follow the order of the research questions.

3.2.5. Respondents

The following respondents were interviewed:

1. Head nurse, woman	Thorax Center UMC
2. Senior nurse, man	Thorax Center UMC
3. Psychologist, woman	Rehabilitation Center
4. Nursing specialist, woman	Rehabilitation Center
5. Senior nurse, man	Thorax Center UMC
6. Head nurse, projectleader, woman	Thorax Center UMC
7. Dietician, woman	Rehabilitation Center
8. Cardiologist, man	Cardiology UMC/ Rehabilitation Center
9. Policy Director, man	UMC Staff
10. Nursing specialist, PhD Candidate, woman	Thorax Center UMC
11. Cardiologist, man	General hospital in Groningen
12. Physiotherapist, woman	Rehabilitation Center
13. Planner Thorax Center, woman	Thorax Center UMC
14. Planner Thorax Center, woman	Thorax Center UMC
15. Business manager, man	Thorax Center UMC

3.3. Stakeholders' vision and perceptions of innovation in health care

3.3.1. Perceptions of innovation in the UMC

To understand better the context in which the heart rehabilitation project was implemented, stakeholders were first asked about their vision on and associations with innovation in health care and innovation projects they were involved in.

A few different perspectives on innovation emerged from the conversations. First, when asked about their associations and vision of innovation in health care, the nursing and paramedic staff, mentioned in more or less equal proportions examples of both technological innovations and management innovations. The given examples predominantly emanate from their daily care practice and/or had been introduced relatively recently. Examples of technological innovations include specific medical equipment, new medicines and treatment methods (e.g. for wound care), wearables and sensors to measure and monitor automatically and remotely health conditions of patients. Organizational innovation concerned the newly introduced Electronic Patient Record System (EPR), new care paths, collaboration in multidisciplinary teams (e.g. the heart pre-rehabilitation) and collaboration between departments (e.g. between cardiology and thorax surgery).

The respondents' enthusiasm for innovation strongly varies with the perceived difference the innovation makes for the patient and quality of care. A representative example of such an innovation in daily practice:

"A good example, recently one of our nursing students did a small research regarding the use of Airlife. This is a device that people use after the operation to ensure that the lungs develop well and the alveoli open nicely again. But there was never a description of, gosh, how does such a device actually work? Then it appears that everyone explains it a bit different. One emphasizes more on this and another who says, in numbers, five times an hour is ok and another says ten times an hour. That way you do not get a clear instruction. Because of that she looked at it at a certain moment. She contacted the manufacturer, made clear instructions about the use of the device, made a good instruction form. Now we can just distribute it to the patient and everyone uses the device in the same way, without twenty different people explaining the device just a little bit different."

Another illustrative example comes from the head nurses who joined forces to address quality of care and innovation in health care processes as they observe that in the last years management only has been paying attention to financial and administrative concerns:

Head nurse: *"As head nurses we mainly manage the department and also we bring ideas to the higher management, but little is done for a long time. As head nurses we have started to visit each other a number of years ago, we have formed a network including scheduling a meeting of one and a half hour every other week, and planning a policy day several times a year. We have divided all kinds of areas of attention of subjects that formerly were dealt with by the managers. But we took it up, because too little was about care content. We thought. We noticed in the department" [...] And it has become a bit of a shift and I think that is a consequence of managers focused on financial issues. How do we get it done again? Only more cost-cutting... this, that. Rearrange, reorganize, you name it. It all had to do with money, all those developments of rearrangements, reshuffle of beds, all was money driven. Not because of patient concerns, not about care content or that the patient is better off in a department. No, that it could run more efficiently, Six Sigma projects. And a lot of budget cuts".*

Interviewer: *"And Six Sigma, that was mainly seen as money driven?"*

Head nurse: *“Well, that is not entirely true, because if you do well, you also have a palliative improvement course. Yes. But it has been brought in, in times of austerity.”*

Interviewer: *“Yes, so the association is more with money”*

Head nurse: *“Yes, and if you do it right, then you also have a palliative improvement, because not every cost cut means that it is getting worse. If you are doing well, then yes, if something can be done faster and easier, then it is often also an improvement, of course.”*

The respondents say they have mixed feelings about the newly introduced EPR. Although they see the benefits of having access to and being able to share all relevant patient information between the different care-takers, the administrative burden is experienced as significant and comes at the cost of time and attention for patient care.

“I am spending fifty percent of my time- And it's sorted out in Amsterdam how much time doctor-assistants spend on digital things and that is half or more. Some researchers also say forty percent. But forty to fifty percent. And you do not have to feel sorry for us, but we have not become a doctor because of that. At least, I did not.”

“If a doctor is twenty percent less productive due to a digital system, then that is not positive.”

A few respondents express their wishes that it should be possible to transfer automatically the data from the medical devices they use for patient exams to the new EPR. Respondents also indicate that quite some colleagues experience difficulties in using the EPR and more support for them is necessary.

3.3.2. Technological versus management innovation

Specialists and the hospital staff reflect from a helicopter view on the role of technological and management innovation in the UMC. Both types of innovations are regarded important, but in the UMC technological innovation has the upper hand.

“Innovation is an important reason for existence for a UMC with its professors and researchers. It is a workplace for innovations”.

“Due to technological innovation, it is possible to treat patients that could not be treated before, improve outcomes and decrease costs.”

However, there is a tension between technological innovation and sustainability of the health system. The incremental contribution of technological innovation is decreasing and causes a

debate on sustainability of solidarity in the health system, while the UMC becomes increasingly dependent on innovation.

“Three quarters of the increase in health expenses is caused by technological innovations”.

“However, the groups [of patients] the UMC could service more are increasingly smaller groups and their treatments become increasingly more expensive. This causes that a large share of the health expenses is made for a limited number of patients. This puts pressure on the solidarity principle of the health system.”

“Our hospital is increasingly dependent on valorization of innovations to get new resources. Money and valorization of innovation allow scientific research”.

The theme of management innovation, or organisational innovation, as it is labeled by one of the respondents, is also important for the hospital.

“Innovation can not be made. We innovate in the way we organize health care as well. Given our geographical position. It is easier to work with other care partners in the North than in other parts of the country”.

“I think we already know a lot [about technological innovation] in health care and can do a lot of good work, but I think the innovation is also about making it more effective and efficient. Nowadays it is also more about saving costs. Health expenses naturally rise in the Netherlands, in terms of prices and in terms of money. So I think there is also a lot of innovation going on. And then it is more about research at effectiveness from which we can benefit”.

“And well, what you see [in the thorax center] is that we still try to adjust things in delivery of care, which reduce the length of stay and which means we get fewer complications. I think these are also innovations. Improvements in the guidelines we have, but also in the treatment. Which means you can actually implement improvements and also limit costs.”

But for the UMC organizational innovation is far more complicated to accomplish than technological innovation:

“Organizational innovations must land in an institutional framework in large organizations with a lot of inertia. Organizational innovation in the beginning is often accompanied by loss, while tech innovation is often accompanied by a lot of profit.”

“a lot of organizational innovations cost a lot of energy, also negative energy”

Although the Dutch government writes in its policy documents that organizational innovation is necessary, legislation supporting it is lacking:

“The Cabinet also says that innovations in health care should focus on a smarter organization, but is not willing to adjust legislation”.

Partly the complexity to implement organizational innovations is related to the institutional context and legislation in the Netherlands that is based on different health care acts for different types of care that ensure that health care payments are only made if a service is delivered for that type of care. The compartmentalization of the health system prevents, for instance, substitution of care for prevention as they belong to different care acts. Furthermore, the payment system is based on paying for treatment of diseases. As preventive strategies avoid that someone develops a health condition, the legal title for payment disappears. The insurer pays for treating disease, but not for staying healthy. Also, health care insurers are organized in departments that contract different types of care and the scope of their planning horizon and contract is usually a year.

“Organizational innovation takes longer. The health insurer is not interested”.

“The Health Care Act has care facilities and ensures that payment is made. Discussions only concern operating costs. It is far too complex to negotiate”

“If you bet on cost savings you will not be paid”

“So first you need an illness to get paid, thinking in health has to change.”

Insurers have a limited percentage, approximately two per cent of their care budgets available for innovation projects. However, once finished, the project simply stops. And the innovation, also if successful, does not become business as usual. The small budget and incidental character of innovation projects do not cause structural changes.

Furthermore, respondents report the administrative burden that draws the attention away from health care.

“Thirteen thousand employees work here, three thousand can get out and the hospital is just as well ... I believe you do not need much overhead in health care. You actually need very little overhead in care. Not necessary at all.”

In addition to imperfections in the regulatory and financial framework in the health sector, respondents indicate institutional barriers on the side of providers that prevent hospitals organizing care smarter, like established positions of decision makers in the organization that

may lose their position in a different organizational context. Also external consultants and ICT systems have commercial interests and have made hospitals dependent on them:

“It is true that we have been bombarded with this enormous progress in health care for more than 20, 25 years. Actually that is in the main economic situation from the 90s - I mean, in the 80s you got the first development with techniques, but from the '90 it is also all kinds of concepts that are being run everywhere. So many agencies took money out of the care. There is a lot going to external parties ... I can choose from a million concepts. There is too much choice. While we are actually saying, we have to say in the Netherlands, we are going with ten major concepts, which we are going to implement broadly and with that we get almost eighty percent of the margin.”

“Purchasing associations that are behind hospitals also make money from purchasing processes.”

Also traditions in organizing research are difficult to change:

“Our professors negotiated the price of an ICD with the company and told my predecessor what [price for the ICD] he could pay to the firm. And that had to do with the fact that a certain amount of money was made available for research funds by these same companies”

3.3.3. Organizational innovation: towards quality of life

Notwithstanding the restrictions and complexity of the institutional context, the respondents of the UMC emphasize the necessity of organizational innovations and to make a paradigm shift from treating disease towards a focus on maintaining health and vitality. The hospital is working on this shift. And the change in thinking happens.

[On the heart pre-rehabilitation project]: “I am very enthusiastic, the concept is very intuitive. We have to think less in boxes, more in a chain. The program is social cardiology. It is important how you relate to people. Feeling heard as a patient contributes to a focus on quality of life” ... “I always have the objective that the patient stays out of the hands of the doctor after the event he became at risk” ... “the objective is to improve his risk profile” ... “quit smoking, knowing why and how you take your pills and start moving” “I am not only pro technology, I have seen quite some misery of overmedicalisation” ... “A support heart is only palliative care, it lasts only 10 to 15 years” ... “I am more in favour of prevention than random distribution of support hearts” ... “Changing people’s behavior is the most difficult thing. The only thing that works is rewarding behavioral change positively.”

Their vision is translated into practice through various strategies:

“We are looking for a social debate, involving members of parliament, citizens...”

“We seek other forms of funding, e.g. population based funding.”

“We still continue to focus on this type of projects [the heart pre-rehabilitation project] “

“We have deliberately started with what we call comprehensive centers. I find it attractive the way it goes with transplantation. A few years ago, the focus was on the transplant. We can do it perfectly. And gradually, in addition to the transplant, it is also about the donation - because you can worry about healthy aging - and what is the life-course effect of that transplant. In short, you should like to find out how the patient feels in about 5, 10, 20 years and what you need to do to contribute to it. What does that life look like from the moment you get a diagnosis of kidney failure and chance of a possible transplant? So professionals, nurses, patients, patient associations sit around the table and discuss: how are we going to shape it? The consequence is, that it becomes much more a community of professionals and patients who are concerned about that question. There are also international Transplant Games. You see working groups emerge. Also surgeons who say: I am good at transplantation, but what would it be nice if I would know if my patient would be still alive within 10 years. Then I really would have the glory of my work. I want to have contact with the psychologist, physiotherapist and I also want to address the more ethical and philosophical questions around transplants: What does it mean that I have an organ from someone else? So that surgeon is also increasingly moving and thinking in a multidisciplinary way. And all of a sudden the NZA [Dutch Health Authority] said: maybe we should not have a DRG [Diagnosis Related Group] for kidney transplants or DRG for kidney failure, but one trajectory for kidney treatment in which we also deal with how the patient feels in 10, 15 years from now. This is a development in which you see that the institutional framework is adjusting for a small group of patients.”

“These are elements that lead to a transformation, in the hospital and in the outside world”.

Organizational innovation also induces new technological innovations. In case of the kidneys, the hospital is one of the large transplantation centers in the Netherlands.

“How can we do as much as possible with the organs? Organs are being rejected, but you may wonder what if we had the ability to keep the organs available? We have developed organ preservation techniques that allow you to transplant more people. Living donors. We also could work with Da Vinci [surgery robot] to see if that robot could make the living donor program a little better for the living donor. We see that sort of techniques emerge.”

The effect is positive for single patients, but also increases health expenses in the health system:

“This leads to cost reduction and quality improvement per transplant. The claims burden, from the perspective of the insurer, is increasing, because we are going to do more transplants.”

An opposite development is seen in a shortage of specialized nursing staff in some specialities due to demographic developments. A focus on super-specialization in hospitals during the last decade has led to the impossibility to move super specialized staff from one discipline to the other. As a consequence operating theaters and intensive care beds are closed and, although there is demand, the number of surgeries decrease.

These developments urge the UMC to define its priorities better, like weighing questions of life and death. The hospital tends to address what is most life threatening first. That keeps the priority in the hospital on curative medicine:

“Curative care can always continue to grow because it is about life and death”.

The hospital is also working together with the health insurer on concepts of value-based health care. Receptivity in the organization for the concept is low. The organization is not against the fundamental idea of VBHC, but flees it as it is perceived as imposed by the insurer.

“I will be very honest how an idea from VBHC comes in here. O god, that is an idea from the insurer. We need to do something with it. Who could we split it in the stomach? It is mainly seen as a registration process, an accountability obligation towards the insurer because the insurer has chosen this as a focal project. It has something to do with and also emerges from the stubbornness of this UMC: VBHC is an English term and concept. We are not so fond of the items that others have come up with. The issue is how can we give substance to putting the patient first. We are working on comprehensive centers ourselves.”

The UMC embeds similar concepts as VBHC in a different way, for instance in the comprehensive centers, which strikingly carry an English label as well:

“Of course, it is possible to implement integrated concepts, but then you have to make contact with the professional yourself. Then we go to that professional with a kind of motivational conversation techniques: we always do it this way, could it not be done in a different way? We will have to convince each individual professional in this way, because at a given moment he will have to say: you know, we are going to do things differently. And can you help create the preconditions to do it better? We will not steer it top-down.”

Next to it the relationship and mutual understanding between the UMC and the insurers are also evolving over time. And maybe not labeled as VBHC, the formation of a regional heart care network is being discussed with general practitioners, other hospitals and insurers in the region. More focus on secondary prevention, treatment of the patient as early as possible close to home in a hub and spoke structure and long term financing contracts are elements of this value based care concept aimed at quality of life and reduction of volume of care services in the region:

“And that's how we have set up HartNet. We said that the cardiology departments of these [other] hospitals and the cardiology and the thoracic center of the UMC will be one department, with one bed

capacity in those two provinces, one outpatient capacity and we are going to see how we can help the patient in the vicinity of his living environment. And that is as close to home as possible, because that means less costs, less social costs, less hospital costs. And we also try to see ourselves as one hospital, that never a need for duplicate diagnostics will exist, which is happening now. And a photo you make in one hospital is a photo that is available to all parties.”

The UMC and university focus on the theme of healthy ageing. Nevertheless, the scope of the what can be done in the hospital is limited. Health promotion and primary prevention are themes that have to be addressed elsewhere. At school, at home and by the general practitioner. The school for public health that is related to the UMC and university also questions how society makes the paradigm shift towards thinking in health. It is a tough dilemma that also requires rethinking institutionalized research habits:

“We have developed a lot of knowledge on staying healthy for a longer period in our lives, but during the period we developed that knowledge we see Dutch children becoming fatter, people are moving less and social economic health inequalities are increasing. The gap between what we want and what we accomplish with that knowledge is increasing”.

“We note that we do not enough in applying that knowledge. Our innovation has been that we said that healthy ageing is not a theme for the UMC, but we should address it broader and with a focus on application, because that is interesting. How do we get this society to move more? How do we get this consumption society to make wise choices in supermarkets with so many and abundant offers?”

“One of the core questions is how do you get researchers to develop knowledge so they can relate to people who want to apply the knowledge? How do you connect the researcher who is paid for developing, not applying, knowledge and publishing general truths in English journals with a supermarket manager that seeks an application in a subjective situation of a certain neighborhood?”

3.3.4. UMC’s perceptions of innovation in health care: discussion and conclusions

In this paragraph 3.3 first the perspectives and visions on innovation in health care were explored with the respondents in the UMC and rehabilitation center. As also was observed in the literature (e.g. ABMA et al., 2016; ISKE 2016; DE KOEIJER; HAZELZET, 2017; NILSSON et al., 2017; VEENSTRA et al., 2017), the interviews demonstrated that health care professionals and managers regard innovation an important theme in healthcare and have an intrinsic motivation to deliver good-quality health care and to improve quality of life of their patients.

The respondents mentioned, more or less in equal proportions, examples of both management and technological innovations that they associated with innovation in health care. The examples given came primarily from their own experiences and practices. The examples however differ for the sub-groups. The nursing and paramedic staff of the UMC and rehabilitation center, whose work may be less technical than that of a specialist, mention maybe even more examples of management innovations being important for their work than technological innovations. On the other hand, specialists and the UMC staff affirmed that within the UMC there exists a certain dominance of or preference for technological innovation. That has to do with the academic and research character of the UMC. Research and innovation is an important reason for being of the UMC and valorization of research generates income. The literature informs us that innovation in health care tends to be more associated with technological innovation (JANSSEN, 2016; ABMA et al., 2016); management innovation is a relatively little explored field. Also, little research has been done at process and system innovations (ABMA et al., 2016), two forms of management innovations in health care.

The respondents explain that the signature of the academic hospital has lead to a natural focus on technological innovation. Technological innovations have contributed to new treatments and therapies and better health outcomes for lower costs. However, returns are diminishing. Patient groups that benefit most from the technological advancements become smaller and proportionally high health expenses related to these small group put pressure on the solidarity principle within and affordability of the health system. The necessity to bend the increasing health expenses, but also the healthy ageing theme within the UMC aimed at improving quality of life for the population and awareness that management innovation can leverage technological innovation, e.g. in the comprehensive centers, generates more attention for management innovation within the organization.

Although the focus on technological innovation may prevail in the UMC, management innovation aimed at integrated care concepts and aimed at quality of life is an important theme for the UMC. The UMC is involved in the development of various management innovations, like comprehensive centers in kidney transplants that are developed by communities of specialists and patients, or HartNet, a regional hub and spoke structure in which the UMC addresses together with primary facilities care and general hospitals cardiovascular diseases. These projects are based on the principles of value based health care.

Nevertheless, there is in general certain ambivalence with regard to management innovation. According to the respondents implementing management innovations is more difficult and costs the organization more (negative) energy and time than technological innovation, while the benefits take longer to materialize. Inertia and institutional patterns have to be overcome. Inside the organization it is not easy to change dominant professional logics, like a strong focus of specialists on evidence based curative medicine. It requires proof that preventive strategies aimed at quality of life are effective and are complementary or an alternative for curative interventions, as was seen with the cardiac interventions of the 80+ elderly. Externally, regulatory and financial frameworks tend to maintain a compartmentalized approach to health care. Health providers need to proof to payers that substitution of curative treatments for preventive strategies that aim to prevent someone to develop a health condition pay off.

The finding that implementation of management innovations is considered complex corresponds with insights from research (e.g. ISKE, 2016; HELLSTRÖM et al., 2015). Management innovations, like the value-agenda as proposed by Porter and Lee (2013), typically contain collaborations between multiple stakeholders in integrated care networks, consisting of multiple interdependent and mutually reinforcing components (organizing around patients' medical condition rather than physicians' medical specialty, measuring costs and outcomes for each patient, developing bundled prices for the full care cycle, integrating care across separate facilities, expanding geographic reach, and building an enabling IT platform. Once all stakeholders and the components are in place, the interaction between the stakeholders and components could result in an added value - better health outcomes and patient experiences relative to the costs incurred to achieve them - where the sum of the total exceeds the sum of the parts.

However, for such a concept to function stakeholders need first to have a shared objective, a shared understanding of the concept and a willingness to collaborate. Therefore, the process along which management innovations evolve is essential to bring stakeholders with different perceptions and understandings of the management innovation concept together.

The attributes of management innovation that it is highly intangible and that few professionals have specific expertise and pay dedicated attention to management innovation cause ambiguity and uncertainty with the people in the organization what the management innovation is ought to be (e.g. BIRKINSHAW; HAMEL; MOL, 2008; VOLBERDA; VAN

DEN BOSCH; MIHALACHE, 2014). To legitimize the proposed management innovation, stakeholders will use prior experiences of similar innovations or inform themselves about experiences from other organizations. This brings more subjectivity in the process (e.g. WALKER; CHEN; ARAVIND, 2015; BIRKINSHAW; HAMEL; MOL, 2008) than in case of a technological innovation, which is more observable and factual. Furthermore, for an integrated care network to function, many actors and factors interact. This process is difficult to align and many necessary actions are beyond the influence of single organizations, e.g. the need for adjustments in legislations or new payments models like bundled payments. The different actions are influenced by different stakeholders active in different domains of the health spectrum and are spread over time in diverging and converging patterns (e.g. VAN DE VEN et al, 1999). Complexity is at stake here. It remains unpredictable what actions or what stakeholders cause what outcomes (e.g. SNOWDEN; BOONE, 2007; VAN DE VEN et al, 1999; BRAITHWAITE et al., 2018). Both the innovation process (e.g. VAN DE VEN et al, 1999) and the health sector (e.g. GLOUBERMAN; MINTZBERG, 2001a) are considered highly complex, and outcomes of actions hence unpredictable.

Therefore, the innovation process has an important organizing function in letting the intangible and complex management innovations emerge from interactions between stakeholders. In these interactions or sense making processes, in which stakeholders discuss with each other the concept of the management innovation and attribute meaning to their perception, the management innovation gets a face (WEICK; SUTCLIFFE; OBSTFELD, 2005; HOMAN, 2005). Stakeholders use their subjective perceptions to make sense whether the innovation is good and real (HOMAN, 2005) for their organizations. Their interactions let different understandings of the management innovation and individual interests converge towards a shared understanding of the concept and willingness to collaborate. These sense making processes are emergent, bottom-up, selves organizing processes that emerge from encounters between individuals in organizations (HOMAN, 2005). Based on insights from chaos -and complexity theories and social constructivism, scholars of unplanned or continuous change (e.g. VAN DE VEN et al., 1999; WEICK; SUTCLIFFE; OBSTFELD, 2005; HOMAN, 2005; BOOM, van den, 2007; WIERDSMA; SWIERINGA, 2002) argue that sense making, the attribution of meaning to perceptions, is essential in situations of high complexity. Change does not happen in a vacuum, but emerges in interaction with other actors in the organization and its local context.

The examples of the heart rehabilitation program, HartNet and comprehensive centers demonstrate that over time management innovations are being adopted and implemented and that mind shifts from an orientation on treating disease towards quality of life are taking place. As seen in the example of HartNet the compartmentalized approach of insurers is changing as well. It takes time for the different stakeholders in these initiatives to get to know, to trust and understand each other to be able to work together on complex integrated care concepts. Shared visions and values lead to collaboration and sense making processes between stakeholders let divergent ideas of the concepts converge towards shared objectives and activities.

The different examples of innovations given by the UMC staff and specialists versus the nursing and paramedic staff illustrate that they see different parts of the care process and the organization and have different roles and responsibilities. They also have different professional logics (e.g. COLLDEN et al., 2017; KYRATISIS; AHMAD; HOLMES, 2014) and educational backgrounds. All together this causes that different professionals, or even different people, frame differently what they see and regard as important. Also language and vocabulary (e.g. HELLSTRÖM et al., 2015) have an impact on the meaning stakeholders attribute to a certain type of innovation as also was seen in the example of the insurers' proposals to the UMC for value based health care projects. For instance, health care professionals often associate the term value in the value based health care concept with monetary value (e.g. NILSSON et al., 2017; COLLDEN et al., 2017; DE KOEIJER; HAZELZET, 2017) and many have at best a partial understanding of the value concept as proposed by Porter and Lee (2013). The main connotation of the respondents with health insurers is that they are mainly interested in saving costs and are not interested in quality of care.

The different perceptions of stakeholders of what an innovation is all about are inherent to and essential for the innovation processes. As seen in the given examples of the intern who developed user-instructions for a medical device, the development of comprehensive centers and reaction on the VBHC projects proposed by the insurer, professionals embrace the innovation (or not) as it makes sense to them and resonates with their personal and professional vision and values (e.g. WEICK; SUTCLIFFE; OBSTFELD, 2005; HOMAN, 2005). Through interaction with other stakeholders - e.g. the manufacturer in case of the

intern, the network of head-nurses, or the communities of comprehensive centers – the professionals make sense of the innovation and develop together a shared understanding of the new concepts. In the collaboration they meet each other, get to know each other, build trust and readiness to work together. They label the shared concepts using an own vocabulary. The different perceptions catalyze the sense making process.

As observed in the UMC by one of the respondents, management innovation cannot be made or imposed. In the UMC innovation is strongly related to entrepreneurship of professionals in the organization who are encouraged to seek constantly new ways to improve quality of life for their patients and delivery of health care. The focus of the management innovation is therefore merely a focus on creating the ability in organizations to employ new management ideas for modifying and improving its structure and processes to enable continuous strategic renewal and organizational change (VOLBERDA; VAN DEN BOSCH; MIHALACHE, 2014) than on developing a single management innovation.

In summary, management innovations, like concepts of value based health care, are important for the UMC, but their intangibility and the complexity of the health sector makes them difficult to implement. Sense making processes have an important role in the adoption and implementation of management innovations in health care utilizing the different perceptions of different stakeholders to create a shared understanding what the management innovation is ought to be and willingness to collaborate. Sense making is often a spontaneous process that happens anywhere and anytime. But it can also be stimulated, by initiating the debate and by setting the pre-conditions. If enacted, sense making processes contribute to progress; under while also slowly changing old institutional frameworks. The innovation process is discussed in further detail in the next paragraph.

3.4. Management innovation processes in health care

A second topic of the interviews is the innovation process through which the heart-pre-rehabilitation practice has evolved from the initial idea, via further exploration and the go-decision to the implementation.

In this paragraph the following questions are addressed: Where did the idea of the heart pre-rehabilitation center come from? How did the innovation process evolve? Who has been involved? How has the process been steered?

3.4.1. Motivation and first ideas for pre-and post-rehabilitation

The first ideas for heart pre-and post-rehabilitation came approximately five years ago from the thorax surgeon who is also head of the Thorax Center at the UMC.

“And the ideas of pre-rehabilitation have been in the surgical world for much longer, so to speak, and in the major surgical operations they all do that. In heart operations not yet in the Netherlands”.

The man, with Italian origins, used to work before in a hospital in Pisa that sent its patients for post-rehabilitation to a clinic in Volterra in Tuscany, Italy. The clinic used to have a regional function for patients from various hospitals up to 200 kilometres from the clinic. The thorax surgeon shared his idea of pre-rehabilitation with the business manager in the UMC. The business manager, a nurse by training, had a firm belief in rehabilitation after the surgery. They shared and crossed their ideas. An idea was born.

“This idea comes from M. [the thorax surgeon], who knew that post-part [post rehabilitation trajectory] from Italy, in which there is a large cardiac rehabilitation clinic in Volterra in Tuscany. Nearby Pisa. The patient travels many kilometers to his rehabilitation after the heart surgery. And that is because M. has worked in Pisa himself. And those patients went to Volterra after the operation of Pisa. That is two hours with the ambulance and there they stay three weeks in a clinic to rehabilitate. And the results were great. “

“And I perceived when I became a head nurse in cardiology, that cardiac rehabilitation is actually much more important than pills. And that the style of life is much more important to prevent your heart disease than those pills”.

“And I believed very much in the pre-part [pre-rehabilitation] from my experience [as head nurse] with J. [the cardiologist] with his outpatient cardiac rehabilitation, in secondary prevention. Then we said, we can now go to an idea in which we will offer that together. And then this concept finally came true.”

“He [the thorax surgeon] has taken with him a lot, I almost say, social influences from the Italian culture, for example rooming-in. ... He comes to me and then calls the word rooming-in, only to remind me that he thinks partners should be present, 24 hours a day, with their partner, the first hours before and after a surgery. That a partner is here, eats, sleeps, rehabilitates.”

3.4.2. Exploration of the idea with a small coalition

The thorax surgeon and business manager developed the idea further into a plan and shared their idea and plan with the staff of the UMC. The staff welcomed the idea. Healthy ageing had been chosen as a focal theme for the hospital and this idea provided an excellent opportunity to practice what you preach.

Staff UMC: *“Very important is the department head, who says, I want to do it. That is basically a co-director in the UMC. So when he says, I’ve thought about it, this seems useful to me. Well, then in fact the burden of proof is reversed, then we [UMC-staff] must make it clear that it is not useful.*

Interviewer: *And why what is useful?*

Staff UMC: *Healthy aging. In fact it is, it is a pilot, just fits within the, say, the mission of this institute. It’s just about actually being able to let people live longer, allowing people to stay healthy for a longer period. Elements that fit in really focus on lifestyle changes. The focus on starting rehabilitation earlier, that people can participate in society more quickly. Fits perfectly in a healthy aging approach.”*

The coalition of the UMC staff, thorax surgeon and business manager elaborated the outlines of the plan. A starting budget for 160 patients yearly was found and in an under-utilized budget of the rehabilitation clinic that was acquired by the UMC ten years earlier. The insurers approved the proposal, mainly because it contributed to extramuralisation of care.

Practical things were prepared:

Staff UMC: *“Yes, means that of course you have some internal organizational questions. It means that you sit around the table with the management of the rehabilitation center and also with the thorax center. From, guys, what does that mean? Because of course it means that certain forms of rehabilitation no longer take place in the UMC but in the rehabilitation center. So those people who are involved, they have to work at the rehabilitation center. Well, what does that mean? And then, who is ultimately responsible for the treatment? What is the control of the person with ultimate responsibility in the rehabilitation center? And that is sometimes very practical. That you have to take into account in the planning of, that cardiologist who must also go to the rehabilitation center. He has to go there by bike, which costs just fifteen minutes.”*

To explore and develop the idea further, a group of eight people, working at the UMC and the rehabilitation center, went together to see the example of the rehabilitation clinic in Volterra.

Participants of the visit to Volterra understood the idea very intuitively:

“You can understand very well that this is a very good idea, even though it has not been researched. The fact that you are thinking of putting a patient in a better condition before the operation within what is safe, everyone understands that this will have a beneficial effect on the recovery after the operation. That is pretty easy to understand.”

In Volterra, the group visited the clinic and saw the pre-rehabilitation concept. Seeing was believing:

“...we also saw patients rehabilitating, which we thought oh, they are lying here [in the UMC] in bed and they were sitting there [in Volterra] on a kind of chair training with the hands and blowing a pipe in a glass of water, with very simple means they were very much activated. Well it was immediately clear, ... So that appealed to us, also to see that that is possible.”

A very important aspect of the visit to Volterra was to know each other:

“we were with a group of- We already knew that we were going to work together with the rehabilitation center, so we are with two head nurses from here [UMC], someone who was appointed as project leader. That was also a manager within the thorax center who at that time had some space in her agenda to lead the project. Project leader, two thorax surgeons... A nurse specialist and from the rehabilitation center a manager, a nurse, a psychologist, a physiotherapist, that's it.

“Yes, we were with a nice club and we went together to develop that project, so we went to Volterra ...on a working visit, which was very instructive. “

“What was even more instructive is to get to know each other, because you're going to do something with people you do not know...”

The plan for the heart pre-rehabilitation emerged in Tuscany during a process in which the group members, who worked at two different locations and who did not know each other at all, learned to know each other and explored and discussed the new rehabilitation concept. The group spent time together and elaborated ideas during meetings in the stimulating environment:

“We had a beautiful location, large table outside the Gallery, yes it was a kind of monastery-like building, so we sat outside. Was a beautiful environment and then you make good plans with each other. We had meetings all day, worked very hard, but in a very pleasant environment”.

“Even more insightful was to get to know each other. We [from the UMC] did not have any business relationship with the rehabilitation center. From this department of thorax surgery virtually no one was transferred to the rehabilitation center or to the heart rehabilitation [an other form of rehabilitation for chronic patients at the rehabilitation center]. The cardiology department had more connections [with the rehabilitation center], but not from this department at all. So I really did not know people. No.”

“And what has been very good, that we get to know people there [in Volterra]. So you spend time together, you sit together at the dining table, you have fun with each other, you drink a wine together and you make a plan together. And yes, I think that worked very well. If you meet each other once or twice a week, then you are still more or less strangers or different parties at the table. I think there is more suspicion, or maybe not, but I think it works like that. And now we could actually, because you make contact, it is all mixed up, really making more plans together, exchanging ideas, especially looking at possibilities. You are in a different environment, which is also good.”

When asked what directives, evidence or guidelines were used for the pre-rehabilitation program, respondents indicated that every single discipline composed its own therapies (physiotherapy), diet (dietician) or mental health care (psychologist) and social health care program (social worker). Nurses took care of the admission and care processes of patients as soon as they were discharged from the hospital and admitted to the rehabilitation center. Through discussions the other disciplines validated the proposed programs from each discipline. The creation of the program content was more guided by common sense and by comparing the developed programs with similar therapies in the hospital or in the rehabilitation center than by hard evidence from e.g. the literature. The participants validated what seemed plausible to them. Trusting the other and his/her professionalism seemed to play an important role in this process.

An illustrative example could be seen in the validation of the biking test:

Physiotherapist: *“Yes, I remember that we presented the program as we were thinking with our disciplines here that we should do it, we presented to J. [the cardiologist]. And he had been watching and he said well, it would be wonderful if it worked like that. Yes, nice, while we were very occupied and curious if he would agree.”*

Interviewer: *“Did you have doubts or fears?”*

Physiotherapist: *“Training intensity, the training frequencies. Well, yes, of course it was a bit of a fuss with preoperative for example, you want to train, but you want it to be safe. And you know someone is there that has that narrowing ... So how do you do that safely? Because it is so sloppy when a few people fall over. So of course we have experience with that, but that was something that we have clearly discussed amongst ourselves, how are we going to do that? And should we not put the nitrospray in the middle of the table if someone gets chest pain? And we have been training with monitoring for years. So patients on the exercise bike sitting on the electrodes and cycling while we have everything neatly in the picture. We have rhythm strips in the picture so we see what happens. We have years of experience with seeing how patients function. And if someone starts to get a little clammy and pale then we are already next to it, so that was not new. But it was exciting. And you have to have good agreements about that: When can we train? And what are we allowed to train? But fortunately our proposal was to let patients not come sooner than they had done a bike test so that we would know what happens during a certain effort.”*

3.4.3. Implementation in the organization

After the visit to Volterra and preparations of the content of the program, the implementation was being prepared. The idea was that in the initial period teams of senior nurses and nursing specialists from the UMC were going to work at the rehabilitation center in rotating shifts of six weeks. The physiotherapist, social worker, psychologist and dietician already worked there. In this initial period the program was continuously further developed. The senior nurses had an important training function to make the nurses at the rehabilitation center skilled and comfortable with the patients that arrived already after five days after the surgery instead of after three weeks recovery. A cardiologist from the UMC became responsible for the program.

The announcement of the plans for the rehabilitation program among personnel raised quite some unrest, worries, emotions and resistance among the personnel of both locations.

First of all, it appeared that cultures between the thorax center and the rehabilitation center could not be more opposed. At the thorax center, people tend to be really do-ers and rather direct. They are very practical and want to solve problems. When the patient is at the UMC he/she is at the stage of survival. In the UMC ‘everything goes in a high pace and with a siren’. It is a hightech hospital environment with a lot of medical equipment. And in case of emergency, a push on the emergency button calls within a minute the surgery team together. It is about interventions and treatment. People working there like the hectic and dynamic environment.

Various respondents explain that this culture is already quite distinct from the cardiology department. Cardiology is a diagnostical specialism and cardiologist tend to be more reflective than surgeons.

The rehabilitation center is situated in a former tuberculosis clinic six kilometres from the UMC in a quiet and green neighborhood. Patients attend the pre-rehabilitation polyclinically and enter after approximately five days after surgery (instead of being discharged to go home after seven days) for the clinical post-rehabilitation during three weeks. At the rehabilitation clinic the patient is in a stable phase before or after the surgery. The professionals apply coaching techniques to support the patient to learn to do things himself. It is more aimed at

quality of life. The patient activities are scheduled upfront in the agendas of the professionals. UMC nursing staff experienced the pace of everything as very calm with a lot of time for everything. As the patient is also in another phase of his illness there is much more room to pay attention to the patient and to get to know the person and family behind the patient. As one nurse said:

“The time that I worked at the rehabilitation center certainly has had an impact on how I [senior nurse at the UMC] look to the person, in that sense - I am a human centered person, I am always very focused on the human part of the profession, only you see people here [in the UMC] and they behave in a certain manner. And sometimes you think that they are a bit unhappy, or a little grumpy... And well, that's fine. But in rehabilitation center you suddenly see that such a person behaves very differently and that you really discover, the phase here [in the UMC] is very often for people a matter of life or death. And that is very often, someone feels so miserable, everything else is not that important. And in the rehabilitation center, because you also have some more time, because the pace is a lot lower, so usually you just have a little more time for the people, you come into contact with them a bit more. People also experience a bit more rest. And then suddenly you see that there was a whole other person behind the patient. So that does indeed matter to me, to be aware of how the people are here, indeed, very often is a survival phase and that it is therefore also that people behave in a certain way. They sometimes build a wall around them, just to recover. And then in the rehabilitation center, people come to rest a bit more, the trust comes back a little bit, they are used to the new situation. And that has changed my view in that sense, on our patient population.”

The UMC nursing staff who initially worked in the six-weeks periods at the rehabilitation center said that they had to get used to the lower pace in everything and the indirectness. Some reported to miss the hectic and dynamic environment of the thorax center. On the other hand, they expressed their appreciation to have time and to be able to focus more on quality of life of patients. They also felt very welcomed by their colleagues from the rehabilitation center.

The nursing staff from the rehabilitation center was quite worried when the pre-and postrehabilitation program was announced. They felt insecure whether they would have adequate nursing skills and the infrastructure to handle emergencies and complications.

“They saw our group of patients, those heart surgery patients, as something that could cause many things to go wrong. All kinds of arrhythmias or resuscitations. They were afraid of that.”

“The crazy thing is, in the rehabilitation center was already a department of cardiac rehabilitation. And those people, there was also a large group actually who was there after a heart attack or after a cardiac arrest and who were actually a little more at risk than our operated [elective] patients whose health condition had been treated, or the chance of something serious by that operation is appearance. That was very difficult to bring together. To give an explanation, that our patients actually, when they are ready for rehabilitation, that actually not many risks are attached to it and that it actually is a group of patients who are already independently when they come, doing their daily living activities

independently. And those therapies, that's the most important thing. And that you as a nurse do not actually have such a big share in that treatment."

By learning to know each other and by site visits to both locations, the nurses of the UMC and the rehabilitation center took away the worries of the staff of the rehabilitation center:

"It is also exchange, so just walk along with them, but also vice versa. So that the people from rehabilitation center came here and saw what we did here and what the care was over here. And that's where it [trust and confidence of the nurses of the rehabilitation center] came back. Those totally different worlds actually came over there. They stood there quite opposite to each other. That basically everyone who is looking here [in the UMC] is saying, I would not have been able to work here, so many things happen at the same time and you have to think of so many things at the same time. ... Here [in the UMC] is a whole bunch of nursing-technical procedures that you have to do with drains, infusions, antibiotics, which they do not have at all. But that only applies if those patients are here [in the UMC]."

For training and safety purposes, the senior nurses from the UMC worked at the rehabilitation center. Later after the implementation and training period, experienced nurses from the UMC substituted the senior nursing staff from the UMC and finally the nursing staff of the rehabilitation center took over.

"...we have spent about half a year to devote time. In the period, we said yes, we have evaluated it, it is going well, we can also withdraw our [UMC] nurses from the rehabilitation centers. We have seen, we started with senior nurses, sending our most experienced people there. That was quite a loss for this department, because that means that we had relatively fewer senior nurses here for the normal care we give here [at the UMC]. Well, that went well, but it was quite a loss. Then we started at a certain point, we said well, it is going well now, the pioneering is over, we also needed those senior nurses back. So for the content, patient safety, but also for pioneering, setting up work processes, what do you need? To be there if a situation occurs that did we not anticipate, how do I solve this now? We needed senior nurses to ensure that all these work processes run smoothly. At a certain point in time, we said yes, our most experienced nurses can also go there, then we will get back some of our senior nurses. That went well too. Well, when at a certain moment we thought yes, we can actually transfer it to the colleagues of the rehabilitation center, because they have gradually received some business, they were also interested. They saw that it was possible to provide good and safe care, those patients who were not scary, nothing else happened. Then in a half-year we handed the patient care of these patients over to the colleagues at the rehabilitation center and then we still stayed a month-at a certain around...So we have given some training and we have just worked together...."

Finally, some UMC nurses experienced that the pre-rehabilitation project was top-down imposed and expressed that they would like to be involved at an earlier stage in the development of a novel practice:

"And in a certain phase we [nurses] were involved, because we were indeed going to play a role there. But then many main lines have already been set out. And maybe that is something that more nurses

indicate. Sometimes we would also like to be involved a bit earlier, because a lot of things have already been filled in and there is not much that can be changed."

"Look, we did not really get that first part, but I do think that we might have thought with each other, in advance, about which patients will we approach for this process? We were very afraid that at some point it would be a kind of push-through system [of patients to optimize the bed occupancy] ... That you can start to think a lot more about this in the beginning. And maybe not so many things would have gone differently, but the nurses from the beginning would have had fewer questions and fewer ideas of, this is going to happen and that will happen. And if you are more prepared for such a project, you will already get a lot more people involved. Because you saw in the beginning that a lot of people did indeed have their doubts. At one point, everyone who was there, saw that it was just very good for the patients. But because the difference in culture was so big, certain people stayed there. And because of that, they might still see something as negative. And I think, if you had clearly indicated this beforehand, hey guys, you work here in this way, but things are going very differently and this is actually what we expect from you."

"Whether or not there would have been a lot of changes in the whole set-up if the group of nurses would have been involved, I do not know, but I do think that you might have involved them better from the start and that would have taken away prejudices."

"Yes, it [the project] came in top-down, but that's not only with this. That is a discussion that still lives with the nurses group [at UMC]. And you see inside in the hospital more people perceive it like that. Recently a colleague had a lunch appointment with a sector director. Coincidentally, he had been internated here in the ward and heard certain things and suddenly he [the sector director] understood it, hey, damned, wait, that's the way how things are going ...let us hear also how the group of nurses looks at certain things. But so far it is still ... really the top-down approach."... "There will be some more room [to discuss that]. Only, the hierarchical part in the hospital is still present."

"There are a lot of things pushed through what we think of, boys, what is behind it? We may have some other ideas about that, but it is good to talk about it together. And I think that, in fact, what I just said, I do not know if a lot would have changed when we were involved in the set-up. But I think, if you can exchange ideas with one another at an earlier stage, maybe it will indeed result in very unexpected things, new insights. But I think that you will understand each other much better."

3.4.4. Discussion and conclusion on the observations of the management innovation process

In paragraph 3.4 the innovation process through which the heart rehabilitation program evolved from idea until implementation was explored.

The literature on innovations in health care (e.g. DE KOEIJER; HAZELZET, 2017; VEENSTRA et al., 2017, ISKE, 2016) mention a tendency for top-down imposed approaches. This was explicitly not the case in the implementation of the rehabilitation program in the UMC. The UMC aims at and stimulates an entrepreneurial culture and mindset in the organization. The UMC staff strives to support this vision with a servant leadership style and by setting the pre-conditions that enable the employees to do their work.

Over time the idea spreads and develops from an inventor (the thorax surgeon) to a small coalition (the thorax surgeon, the business manager, the UMC staff and the group of eight that went to Volterra) and to the rest of the organization in the Thorax Center and Rehabilitation Center. The innovation process evolved as an emergent, non-linear and self-organizing process (e.g. VAN DER VEN, 1991; WEICK; SUTCLIFFE; OBSTFELD, 2005; HOMAN, 2005) and followed roughly the process phases of innovation (motivation, invention, implementation and labeling) as described in the literature (e.g. IDENBURG; PHILIPPENS 2018; MINKMAN et al, 2013; VOLBERDA; VAN DEN BOSCH; MIHALACHE, 2014; BIRKINSHAW; HAMEL; MOL, 2008).

It is observed every time that the idea was shared with new people (first, the surgeon with the business manager, then the UMC staff, followed by the group of eight and finally the other colleagues at the Thorax Center and the rehabilitation center), sense making process were at work. A first element of sense making was that the idea of pre- and postoperative rehabilitation made intuitively sense to them and corresponded with people's values and vision on health and care. When the group of eight visited Volterra and saw the example of the Italian rehabilitation clinic they were immediately convinced that it was something good for their cardiac patients. A second element of sense making was observed when the colleagues of the thorax center and the rehabilitation center who went together to Italy, but hardly knew each other, indicated that, more important than elaborating together the joint care concept, was to know each other as a person and professional, to understand each other's way of thinking, vision, values and ideas. That happened there in Volterra at night drinking something together, but also in the meetings. A third element of sense making concerned the content of the program that converged, through discussions, to shared insights. The content that emerged was more based on what seemed plausible to the group than based on hard scientific evidence, guidelines and protocols (e.g. WEICK; SUTCLIFFE; OBSTFELD, 2005; KYRATSIS; AHMAD; HOLMES, 2014). The same phenomenon could be observed later in the implementation phase where the nurses of the UMC thorax center and the rehabilitation center visited each other's sites. The site visits resulted in knowing each other and insights, understanding and appreciation for the colleagues and the other location. Presuppositions, fears and feelings of not being in control or capable to attend the new patients in the post-rehabilitation process diminished over time by working together and training. The

observations can be interpreted as enacted sense making or organizational learning (TSASIS et al., 2013) processes that do their work. Very opposite cultures of the surgical thorax center and the rehabilitation center aimed at quality of life demonstrate that sense making processes bridge distances that might seem far at first sight.

Sense making is an iterative and interactive process that, if enacted well, can bring people and concepts, in this case the integrated rehabilitation program, together. The observations how the new rehabilitation program comes into being in the real world with all complexities is in line with Van de Ven's (1999) innovation theories on complexity and theories on sense making and unplanned change (e.g. WEICK; SUTCLIFFE; OBSTFELD, 2005; HOMAN, 2005). It is not the hard factors like a mission statement or definition of the care path, but soft, subjective, intangible factors as trust, team spirit, shared values that let the transformation emerge (IDENBURG; PHILIPPENS, 2018).

The shared vision, values and obvious benefits for patients of the rehabilitation concept have been a very important pre-condition for the stakeholders to discuss the concept with an open mind. All stakeholders emphasize their appreciation for room for initiative and entrepreneurship. At UMC staff level, at the thorax center and at the rehabilitation center, among different disciplines and at different levels. Also the perception of a few nurses that changes in the UMC tend sometimes to be imposed top-down, can be interpreted as a suggestion for more involvement of, in this case, the nurses in discussion and development of new plans. Scharmer and Kauffer (2013) label this as co-sensing and co-creation. An interesting aspect of sense making is that it happens anytime and anywhere. Often spontaneous and unplanned, but it can be stimulated by e.g. the idea to send the group to Volterra to see the example in the rehabilitation clinic. If an idea is imposed top down, but does not resonate with the values and vision in the organization, sense making processes in the organization work against the proposed innovation, as was seen in the previous paragraph where VBHC proposals from the insurers were put aside, because the UMC staff did not identify themselves with the perceived objective of the insurer.

The observations demonstrate that the process through which management innovations evolve is merely the creation of an innovation capacity, change capacity or entrepreneurial mindset in the organization where members co-sense and co-create. It is rather an

organizational characteristic that let the innovation emerge than an innovation that let a change in the organization emerge, although the organization and the innovation will reinforce and shape each other. It is a continuous process where one project leads to the other and the organization continuously innovates and transforms. If aligned well with vision and values at organizational and individual level sense making processes bring people and integrated care concepts together. If not, the organization organizes its own resistance with few guarantees for success.

3.5. Critical success factors that drive or impede management innovation

In essence this research question aims at understanding what factors further or impede management innovations in the UMC, like the pre- and post rehabilitation program.

In the previous two paragraphs of this chapter the importance of a mindset and entrepreneurial culture for innovation has already been discussed partially and illustrated with examples. Also light was shed on the institutional context, both in the regulatory and financial framework in health care and in institutional habits and customs in the organization self that caused ambivalence with regard to management innovation. We also saw that people needed to have trust, capacities and knowledge to be able to work as a professional in the pre- and post rehabilitation program.

In this paragraph the philosophy of the model of Ajzen (1991), which was earlier discussed in paragraph 2.3, is used to analyse what factors advance or withhold progress in management innovation. In this model the readiness to change organizational behavior is determined by three groups of factors: the *willingness* to change behavior, the *necessity* to change and the *ability* to change.

The attempt is to analyse the critical success factors for management innovation mentioned by the interviewees and to group them in one of the three groups of *willingness* to change, *necessity* to change and *ability* to change. Subsequently the groups are compared with each other to make sense of what factors will have in the end the largest weight in driving or

impeding innovation. It goes without saying that this is a rather subjective interpretation based on qualitative research of a relatively small series of interviews in a subjective context and therefore can not be used for general valid predictions. However, this sense making exercise may give a clue how the different groups and factors interrelate and who or what drives management innovation.

3.5.1. Willingness to change

The *willingness to change behavior* is related to perceived consequences for someone's work, emotions evoked by the change, added value of the change for the organization and involvement with the change.

Three key factors that enhance the willingness to change emerge from the interviews: improving the quality of life for patients, entrepreneurship and the change process.

Throughout all interviews emerges the notion that pre- and post rehabilitation programs are very good for the quality of life for patients and this is seen as a main driver for the professionals' enthusiasm and involvement:

"When it comes to results, you probably would not be able to get them from the numbers yet, but what we just saw of reactions of patients, that we really thought, this is great. This is for a large group of people, who normally come home after a heart operation and are thinking: and now? I actually have no idea what I can do... I have been told something [by the hospital], but yes, I see a lot of things that I had not thought about before. ...

[About the results of the post-rehabilitation] I think that for the largest group of patients there was already an enormous victory within that [first] week. And I do not think you'd made that progress when someone went home. Because then they stick more in bed, act still very cautiously, they wait, and do not have that guidance` the nurse can help with, how should you deal with the medication that you suddenly have to use? Hey, how do I organize all that in my life?"

"And then [due to technological innovations and new treatments in cardiology] I also saw that we can almost turn 100. Only you know from scientific research, not everyone becomes 100 happily. If you look at the happiness of life from the 85-year-old to the 100-year-old, life is no longer great and the life expectancy is also no longer great. And what one expects from life is not that big anymore. But if you are told by the doctor that you have to take that thing [a medical device or surgery], then you do that as a 85-year-old. And now we have achieved, that quality of life is the topic of conversation in the consulting room. And that is what we have agreed on in HartNet. This is also the case in the periphery. And that there is an honest conversation with the patient, family, with the doctor, what do you expect from the surgery? What do you expect to be able to do with your life afterwards? And if the expectation is, I think I can make that world trip again, or I think I will - Then we have to adjust those expectations.

If you can now do the shopping independently, then that is a nice fact, we will tell you. And after the surgery you will hopefully be able to do that for a few years. But if you do not do it, it might also be a few years. That conversation is now taking place. And as a result, there is less demand for care. And that is my aim, that there is less demand for care.”

A second aspect is entrepreneurship in the steering philosophy of the UMC:

“Look, stimulating entrepreneurship, on the one hand it has to do with the culture and the type of person you attract. This is an organization where the focus is not directly on cost savings. The focus here is really on science. Therefore, unlike other hospitals, people are not free entrepreneurs; they are just in paid employment. So they do not have to worry about their salary and their food and drink. They can just be busy with, how can we make people healthy for a longer period? So you also attract that kind of people.”

As seen in the previous paragraphs people are encouraged to take initiative and to do what they consider to be important. This happens at departmental level as seen in the example of the intern that organized a manual to use a medical device, at intra-departmental and at organizational level as seen in the rehabilitation program and intra-organizational, as came forward in the competence centers and the heart network. Within the organization the pursued attitude and behavior is referred to as entrepreneurship. In interaction with other external stakeholders, like patients, patient associations, insurers, GP's, general hospitals and so on, terms as 'communities' (e.g. in the competence centers) and eco-systems complement the vocabulary associated with entrepreneurship. In both the internal and external settings processes of co-sensing and co-creation take place.

A third frequently mentioned success factor is the innovation process and the involvement of people in the development of the novel practice. Enacted sense making processes, as discussed in the previous paragraph, cause people to be willing to work together and let initial divergent perspectives converge towards shared visions and concepts.

“People find it difficult to meet with foreign colleagues: what is your plan? Can I trust you? If needed, do you help me? yes, there they are - people like each other. So, investing in it, working together and also informing them early was also good, with the information meeting in which all concerns could be shared... Because you also just deal with worries and objections, because that is what lives in their minds and something has to be done with it. But in the meantime, you just keep moving forward, eh, so let's say, we go there and that goes on as usual... That is also important, that you just put the dot on the horizon.”

3.5.2. Necessity to change

The *necessity* to change has to do with experienced internal or external pressure to change.

The development rehabilitation program was primarily driven by an intrinsic motivation to improve quality of life for patients and the opportunity to make health care better. Hence, there was a willingness to change.

Nevertheless insights have developed over time that secondary prevention may sometimes result in better health outcomes (quality of life) than curative interventions. In the long term these insights, if embedded in new professional values and logics, may create a necessity and logic to focus more on strategies of secondary prevention.

“We believe that we have scientific gold in our hands. If the outcome is later what we think we are going to have, namely shorter ic-length of stay.”

“I think that cardiac rehabilitation should be a standard treatment. ... And that you should offer standard secondary prevention to everyone who is ill, not just cardiac rehabilitation, but everyone who falls ill through, I say, welfare diseases. ... Because you can also offer such a program to a cancer patient. There it is not normal at all to offer this kind of programs. That [Cancer programs] is indeed social and about skills, but are no exercise programs. And I believe that indeed the combination of exercise and social support, that is the power of cardiac rehabilitation. That this can be the strength of a cheaper healthcare system.”

Financial constraints, both in the past and in the near future, have urged the organization constantly to re-think how health care needs to be organized to remain or become sustainable. Financial constraints and new insights how health care can create better outcomes for less costs urge organizations to innovate:

Business manager: *“Quality of life is the magic word. It’s role ...- And that is the hard part of HartNet, in which our surrounding hospitals still think of production, because that directly affects the salary of the specialist in these hospitals. Where we started a mindset, five years ago I think, four years ago, of, we should be able to go for less turnover in the academic hospital. I believe that we can go to a decline in care, in health care turnover. And I have been trying to explain that for four years and I think I have got our own internal organization so far, and that’s what I’m trying to bring out now. And that has to do with my background as a nurse, in which I saw that we put a lot of expensive US products in patients, where their quality of life did not improve. And that’s what I saw as a nurse. And then I thought, how can we enter into the conversation about quality of life with patients at the front of care, so that they themselves will make a choice not to go for that [surgery] procedure?”*

3.5.3. Ability to change

The *ability to change* is related to knowledge and competences of someone and the extent to which someone experiences to be in control during the change. This ability is influenced by factors like knowledge and experience, the change approach, availability of information concerning the change, the change capacity of the organization, the manageability of the change, timing of the change and complexity of the change.

The critical success factors for the ability to change that emerged from the interviews are the servant leadership style in the UMC encouraging entrepreneurship, the ability to bend counterproductive institutional elements in the external and internal environment, measuring innovation outcomes and the ability to change people's behavior.

UMC staff supports and facilitates entrepreneurship:

“The second incentive [for entrepreneurship] is, which comes naturally nationwide, reduction of research subsidies. So we also went to the researchers, guys, if you want to keep on doing research, then money has to come in some way. And how you can get the money is to sell your inventions. And we're going to help you with that. We have therefore set up a venture capital company. Who can also invest in risk-bearing activities. We have set up various funds including, for example, a healthy aging fund that can help individual researchers or groups to turn an idea into a kind of concept or proof of concept. Of course we have all sorts of supervisors who help with drawing up subsidy applications. People who help with intellectual property. In short, we have put in place an entire infrastructure that actually helps people. But how do you stimulate that entrepreneurship of that individual employee? Yes, especially of course to say to that individual employee, dude, just do what your heart tells you.”

“You will not immediately see a reorganization here at home. Because it means that the board of directors will think about how the organization should be. No, the board of directors assumes that the people indicate which organization works best for them and can subsequently facilitate or actually arrange this. What does happen is that of course all kinds of stimulating measures take place. Every so often and then, there is of course a broader discussion in this house about what is called the research strategy. Guys, where are we now? Where do we find each other?”

A factor that slows down the ability to change is the compartmentalized regulatory and financial framework and the silos of the different departments at health insurers as was discussed in paragraph 4.2. Old regulatory and financial frameworks and old behavior of the insurer do not compensate the innovation efforts and results of health care providers, which cause health providers to focus first on technological innovations that pay-off better and immediately. However, this institutional context is in the meanwhile shifting as can be seen in the conversation between hospitals creating the heart network HartNet and the insurers:

“Insurers, they also have a market operation among themselves. It was very difficult to get them together at the table, [to discuss the concept of HartNet] But it worked. They still want to push their own flagship forward. I'm convinced that over- That's a bit of a bluff. In eight years, HartNet will make contracts with insurers and no longer UMC.”

“We have an overarching agreement with our largest insurer who has 50 percent, 55 percent market share, a five-year agreement in this area, only for this plan [for HartNet]. That gives us peace. And in that period you can keep turnover stable and actually reduce internal costs by at least doing other things. It is more towards the front. Organize the care in the right place.”

[About compartmentalized regulatory frameworks and departments at insurers]: “I have no problems with that either. Because they [insurers] are now also bigger - They are all able to look at the bigger picture. That is very positive. And they just look at my promise, we do not grow, they trust that. And they all make those bigger agreements because they have faith in it. I am very content with that. It also gives room to work towards it...”

Also in the Thorax Centers some colleagues still have old orientations and professional logics focused on curative interventions, which need to be bent towards more focus on quality of life. That explains the importance of the research by three PhD candidates regarding the outcomes and costs of the pre- and post rehabilitation program. Specialists and scientists need to see proof to change their behavior. And in their tradition, that proof should be scientific.

A third factor that has a positive impact on the ability to change is measuring outcomes of innovation. For example, in the contract of HartNet with the insurer:

“How do we measure the quality of life? We will determine together with these groups [insurers and patient associations] how exactly we will measure that. And that's the NHR data. You know that, NHR, Dutch Heart Registration, what Meetbaar Beter [Health Improvement Program] was? We are going to add quality of life to that. Then you have a package of data, because we also say that we will achieve better quality at lower costs.”

Also the UMC-staff monitors the results of innovations to reflect on their strategies and how they can set the pre-conditions to further innovation.

“We also regularly monitor what our spin-offs are and what the return is. ... We keep track of the number of resources we receive each year by actually valorising knowledge. We keep that up, so we also score publications, which we also see as innovation. So we look very critically at innovations, for publications. And yes, we also have a center for development and innovation, which also consciously engages in personal relationships with those researchers. And in this way also acts as a kind of supervisor in that process, advises what to do and what not to do. So, we think we really know a lot of those innovators.”

Finally, changing behavior was mentioned as the most difficult thing to accomplish in the UMC. Stimulating positive behavior was mentioned a few times:

“Of course you have to be a role model. Cardiologists do not need to weigh one hundred and fifty kilograms. They also do not have to keep a cigaret behind their back. Role model, you have to do it

naturally- Somehow you have to do it- You must empower the behavior. You have to be human- You have to reward them for something. You have to think about how you reward people when they take their pills and when they get on their bikes. You have to reward people, because then something works. Psychologically you have to reward people if they show desired behavior. That can be done in a classic way, that can also be operational and you can condition people. I know, you have to reward them."

"Because the strength of the pre- and post rehabilitation program is the duration of the process, namely the momentum you have. You have that heart surgery beforehand. You have the family there. You have clinical post-surgery, where you can really do intensive counseling. And then you still have that three months or what is it? Two months outpatient with conversations. The duration of the process. That is the power of this program. But I believe in that M [the thorax surgeon] taught me and J [the cardiologist] also did, you have to repeat, repeat, repeat. I believe that the variants on the pre- and post rehabilitation program will soon be cheaper and can have just as much effect. And I hope that this will be the result. I believe very much in secondary prevention."

3.5.4. Discussion and conclusion on factors that further or impede management innovations

In paragraph 3.5 the critical success factors that furthered or impeded the adoption and implementation of the pre- and postoperative rehabilitation program were categorized in three factor groups that together determine the readiness of an organization for change (AJZEN, 1989): *willingness* to change, *necessity* to change and *ability* to change.

The driving factors of the studied management innovation of the pre- and post rehabilitation program have primarily to do with the willingness to innovate: intrinsic motivation to make health care better, entrepreneurial behavior and mindset to contribute to do what people's heart tells them to do and an implementation process that makes sense to the people involved. Without this willingness nothing would have happened.

The necessity to change was less an issue in the case of the rehabilitation program. In the initial period, some slack in a budget could pay the bill. However, decreasing budgets in health care urge to achieve better outcomes with fewer resources as was seen in the agreement between HartNet and the health insurers. Organizational innovations that contribute to better outcomes for fewer costs are likely to be adopted at a faster pace than in a situation without the necessity.

The ability to change works for a major part into the same direction as the willingness and necessity to change. Stimulating entrepreneurship, measuring and monitoring outcomes of innovation and role modeling of pursued behavior drive the organizational innovations. On the other hand, institutional elements, both in the external and internal environment, undermine the innovation efforts and work in the opposite direction. It depends on how strong the institutional counter forces are, whether the innovation stops, or is being slowed down. If the necessity to change increases (for example because of financial pressure or evidence that prevention works much better than a surgery), the institutional forces will diminish over time and the innovation comes into being. Under pressure everything becomes fluid.

3.6. Results of management innovation in healthcare

The aim of this research project is to understand the role of management innovation in making health systems sustainable. The tested hypothesis is that to improve the sustainability of health systems management innovations have to contribute to better health outcomes and patient experiences relative to the costs incurred to achieve them. In this paragraph the results of the pre and post heart rehabilitation program of the UMC and the rehabilitation center are discussed. What are the results? Can the results be related to value? Is it possible to observe or measure better outcomes and patient experiences and lower costs? If so, can they be related to management innovation?

3.6.1. Qualitative results

When asked upon the results of the pre and post heart rehabilitation program the respondents react unanimously very enthusiastically about positive patient reactions they observe or receive. Some typical reactions of patients on the program are:

“It works fantastic. Training the weeks before the operation to get in optimal condition. Instead of waiting and worrying at home.”

"I particularly liked the social support. Not only from the different therapists and experts but also from the co-patients."

"The beauty is that you take your healing more into your own hands. Instead of going home after the operation, get started immediately with recovery under expert guidance."

The professionals indicate multiple factors that cause positive effects of the program; the early start of the rehabilitation immediately after patients arrive from the hospital after the surgery and the intensive program; the duration of the program that makes behavioral changes more sustainable; the support of, and social contacts and exchange of experiences with other patients; and much and personal attention of the care-takers for the patients.

"Yes, patient satisfaction is extremely high. And people really give in, I had never come this far on my own. Exactly, because it is quite intensive and starts immediately. So in that sense those results are good."

"I really think in the sense that people are very intensively and very consciously engaged in their health. I think that is also a bit more than when you go home and you end up in your own setting again, I think you will return to your old way sooner. I think that's a profit."

"You [the patient] have a lot of fellow contact. People are also very interested in that. We also hear that a lot."

"Yes and a factor, which of course is also a bias, is that there is of course a lot of attention for these people. They receive a lot of attention. They see physiotherapists every day, it's all very personal. They have nursing specialists whom they can ask anything about medicines, whatever. Nursing as well. A psychologist if you want, a dietitian if you want. So in that sense, I think that also, that attention is also called a bias in the study, [...] I think the attention in itself also just does a lot and that in that sense you also make people happy. That also influences why they are so positive about rehabilitation."

The implementation of the rehabilitation program has been smoothly as well. The initial concern for complications and adverse events, like tamponades (bleedings) that can occur in the first days after patients arrive at the rehabilitation or at moments that patients develop a complication and need to be transported by ambulance to the UMC, diminished over time as the senior nursing specialists and nurses could handle them adequately and on time. Nursing staff at the rehabilitation center was trained and became confident to resolve adverse events themselves adequately.

A few results of the program turn visible. First, the average length of stay at the UMC for heart surgeries has reduced from approximately seven to five days. As patients stay subsequently three weeks in the clinical environment of the rehabilitation center, adverse events and complications were signaled at an earlier moment than in a situation at home. By acting immediately re-admissions in the UMC could be prevented. Some respondents also

said that their initial fear that patients would be transferred too early after surgery from the UMC to the rehabilitation center to improve bed occupation in the UMC proved to be ungrounded. On the contrary, patients recovered much better at the rehabilitation center.

3.6.2. Quantitative results

The first results can only be assessed in a qualitative way. The respondents, especially the PhD researchers, indicate that it is still too early to make a quantitative or financial assessment of outcomes and costs related to the program. For a validated quantitative outcome analysis and costs, data of approximately 300 patients, including the long term health outcomes that only can be measured after more than one year after the rehabilitation, will be necessary. At this moment a complete data set of approximately the first 50 patients is being analysed.

The respondents inform that quantification of primary and secondary outcomes and costs is essential for valuation of the pre- and post rehabilitation program and to assess whether it has an added value compared to other or more limited programs, for instance, only post surgery cardiac rehabilitation.

The valuation is important for deciding, based on evidence, on the continuation of the program in the future and to assess if and how adjustments should be made. The valuation serves two principal purposes: the first is to convince payors (insurers) of its added value (measured as outcomes relative to the costs to achieve them), the second is to demonstrate the added value of the program to the clinical staff in the UMC. Evidence that outcomes improve and costs decrease are a means to demonstrate to both payors and clinical staff that it pays off to substitute or complement surgical interventions with therapies aimed at improving quality of life. This type of evidence contributes to understanding and building new professional logics among the staff and payors and increases their readiness for adoption of VBHC practices that focus also on quality of life rather than on surgical interventions only.

Research at outcomes and costs of the program takes two to three years to deliver results.

3.6.3. Complexities in measuring outcomes

Measuring outcomes and costs also illustrate technical and conceptual complexities inherent to concepts of value driven health care. First, it is important to define the scope for which costs and revenues are taken into account. It is not only the costs comparison between the operational costs and revenues in the situation before with a cardiac surgery and three to four weeks later a polyclinic rehabilitation program versus the new situation with a pre-rehabilitation prior to the surgery and a post-rehabilitation in a clinical setting of the rehabilitation center after the surgery for three weeks, followed by a polyclinical rehabilitation after three weeks, but also costs related to avoiding adverse events and long term societal effects in many more domains than just the UMC:

“There are several theories about the pre-and-post cardiac rehabilitation study. If you assist them better in surgery, you may have a chance of fewer complications. That is a hypothesis. Better in, better out. And second, exactly because the entire process is so long, it is more intensive. It is also thought that the secondary prevention will be better in this group, so that eventually you may also have lower costs in the long term. Because people have had more contact with dietitians, smoking cessation is pretty intensive there, medication, education. What do I use for what? It is more intensive than in the regular setting. So in that sense the rehabilitation center also saves costs towards the general practitioner, towards smoking, all that sort of things. That is the idea in the ideal world. And then it will pay off again in less healthcare costs.”

To calculate these costs and savings, health consumption data of patients in other domains than the UMC and the rehabilitation center have to be considered as well. These data are not known or directly accessible for the UMC and the rehabilitation center. In the Netherlands, health insurers are the only stakeholders in the health system that have access to these data in the overarching health care domains. However, since the market mechanism in health care is a system of managed competition, health care prices vary from insurer to insurer. The consequence is that data are not comparable for the purpose of this study. The researchers found a solution:

“So we decided to keep it much more with the patient. And patients receive different questionnaires, a medical cost questionnaire, the MCQ and the PCQ. The PCQ is the productivity cost questionnaire. These have been developed by the Erasmus research center in Rotterdam. And then there are questionnaires in which you can ask for both labor participation and care use. And that care use is then the MCQ. And then every three months or every four months that questionnaire is taken with the patients.”

Hence, patients report health care consumption. Although statistically validated, this practice exposes the technical complexity and vulnerability of measuring effects, a fundamental principle of VBHC, across various health care domains. If measuring data becomes too complex or dependent on more than one stakeholder, it will be difficult to calculate the added value of a VBHC practice over all domains. If it cannot be measured, it may lose interest of the stakeholders and the VBHC practice may be forgone.

A more conceptual complexity has to do with measuring a construct as quality of life, which is no common practice in surgical specialisms yet:

“Quality of life is pre-eminently one of the measures where more research is being done. Also in the thorax surgical area. But to what extent that also has clinical consequences, I still think that is a bit lacking. On the clinical side, in that sense, it [the concept of quality of life] is still something of a soft outcome measure, what is difficult to interpret in practice.”

To a certain extent it can be understood that quality of life is not the first theme discussed at the thorax center, since when patients are there, they have already decided to have the surgery. At that moment the surgery must be done:

“That is also the situation that something is really going on. The nice conversation does not help very much.”

In the rehabilitation center the mindset is much more focused on quality of life:

“And you notice that in such a rehabilitation center much more is looked at the long term, but also much more is discussed with the patient: what are your goals? What are we going to do here? And much more is the responsibility of the patient itself. I found that very striking to see that. Physiotherapists can do that very well. Well quality of life, that is becoming more and more important. In health care it also shifts more and more from hard outcome measures, mortality and complications to much more of what is important for the patient.”

On national level efforts are done to integrate quality of life in outcome measurements:

“The national, the NHR, Dutch Heart Registry, collects data, which is a foundation where all thoracic surgical centers provide data. And that all comes together, overarching, all that data is collected in a book, which is released every year. Where then from the last five years the results can be seen from each center in itself, but also per intervention. So the pci’s are said, how the complications are, how the mortality is. This also applies to CWGs, for valves, for people with atrial fibrillation [...] Yes, that is really value-based health care. That is clear to everyone. That is on the internet. And it is also very transparent, because centers indicate how things are going. And quality of life was added a few years

ago as an outcome measure. And the research that I have done is with three centers from the Netherlands that supplied it at that time. And that has already been expanded to seven, eight centers in the Netherlands. So you notice this shift in the cardio surgery.”

Within HartNet these discussions on quality of life as outcome measure has resulted in more attention for elderly patients:

“Well specifically, with a view to aging. I have done a little research into the quality of life of 80 + people after COPD a year after the surgery we measured quality of life. In fact, the 80 + 's improved less, a significantly larger group deteriorated compared to younger patients. And quite a number of patients indicated, if I could choose again, I would not do it again.”

“The UMC has a preoperative consultation hour. The elderly are also invited for this earlier. It is not yet the case that we are here so far that every 75 or 80 + sees a geriatrician. Other centers do. We are not that far yet. I also do not know if we are going to do that. But there is a much more conscious look at patients who are operated at an older age. It is not the only measure, but it is a trigger to look further.”

3.6.4. Discussion and reflection on results

In this paragraph, results of the pre- and post cardiac rehabilitation program have been discussed. Patients are very enthusiastic. According to the health professionals who work with these patients, their enthusiasm says everything and shows that the program is a success. Quantitative and financial results of the rehabilitation program are not available yet. Respondents emphasize the necessity of evidence based on quantitative and financial outcomes in order to convince payers and colleagues in the UMC of the added value of the program. Evidence that it works is indispensable to further a culture in the UMC that is more oriented at quality of life and for continuity of this program in contracts with insurers. However, measuring the outcomes and costs across the different health domains and measuring constructs as quality of life remains complex. To advance in applying value driven management innovations like the cardiac rehabilitation program, ‘a certain system resistance’ has to be overcome. An integrated health care concept requires collaboration among the stakeholders, in this case the UMC, the rehabilitation center and also the payers. For the concept to function, they need to know each other, trust each other and to have a shared understanding of the concept, because of the many interdependencies among the stakeholders in the concept. The value of the integrated care concept is more than the sum of its parts. This value can only be generated if all stakeholders enact together the innovation process and learn by doing and do by learning. A comparison of the heart rehabilitation project with the six

interacting components of the Value Agenda (PORTER; LEE, 2013) demonstrates that the management innovation is being implemented in a gradual process. The first component concerns organizing the care process around a patient's health condition and his needs. The care path between the pre-rehabilitation, the surgery at the thorax center and the post rehabilitation has been developed and function well. The second aspect of value based health care is measuring and benchmarking outcomes and costs in order to know where to improve. Measuring is not an easy task as many data, e.g. for calculating the costs savings for society, are not directly available for the hospital and the hospital needs collaboration from other stakeholders. These measurements can provide the evidence necessary for structural shifts to orientation on quality of life in health care and adoption of VBHC concepts. Evidence causes here a 'chicken and egg problem' where it is necessary to do first and to collect the data to make the evidence and where evidence is conditional for some stakeholders to make mental shifts in their understanding of what good health and care entails before they adopt new practices in health care. With regard to the third component of bundled payments, health insurers are very hesitant in moving to population based payment models. Fourth and fifth, the heart rehabilitation program is likely to become part of the regional Heart Network in the near future. In essence the network is a regional hub and spoke structure with concentration of specific tasks in specialized regionally distributed locations and with alignment of activities between the different types of locations. And sixth, an enabling IT-Platform is foreseen to be part of the regional Heart Network, which will allow efficient data exchange of patient information.

To implement the value based health care concept, departments and organizations need to leave their own silos and learn that the integrated network becomes their new domain with more dependencies on other stakeholders. This process advances with shocks and takes time as stakeholders need to find and adapt to each other. As seen in the previous paragraph, people in health care are intrinsically motivated to deliver good quality health care. The necessity to change and the ability to change accelerates the pace in which changes evolve.

3.7. Conclusions and suggestions for further research

The aim of this case-study at rehabilitation before and after cardiac surgery is to explore stakeholders' perceptions of management innovation in health care. Innovation may contribute more to the sustainability of health systems than it does nowadays. However, how innovation in healthcare really works, is at best partly understood and relatively few organizations are successful in implementing new practices. Especially management innovation - that is 'the invention and implementation of a management practice, process, structure, or technique that is new to the state of the art and is intended to further organizational goals' (BIRKINSHAW; HAMEL; MOL, 2008) - is relatively an unknown and young field that could have, both complementary to technological innovation, but also on its own, a major impact on innovation results in healthcare.

Rehabilitation before and after cardiac surgery can be considered a concise, but representative example of a management innovation that fits in the philosophy of value based health care. The objective of the rehabilitation program, also labeled as 'Better In, Better Out' is to make the patient mentally and physically fit before and after a cardiac surgery by a program consisting of bike training, (cardio) fitness, respiratory exercises and counseling and coaching. The program aims at reducing complications during and after the surgery and enhances patients' recovery, quality of life and return to society after surgery. The program is expected to deliver better health outcomes and patient experiences relative to the costs incurred to achieve them. This case-study has explored what it has taken the two main stakeholders, the thorax center at the UMC and the rehabilitation center that is also part of the UMC and located six kilometers away from the UMC, to develop together this new practice of treating cardiac patients. The thorax center and rehabilitation center are both departments of the UMC, but used to have little in common and have quite different roles in the care process and almost opposite cultures. Understanding if and how these two departments together have succeeded to develop an integrated care concept informs us about the process of adoption and implementation of this management innovation, the enabling factors and results. The rehabilitation program fits in the UMC's focal theme of 'healthy ageing' and the therapy is more than before aimed at quality of life. The program is also related to the

regional heart network that is being developed at present by the UMC, primary care facilities and general hospitals in the region.

First the respondents' visions and perceptions of innovation in healthcare were explored. The interviewed stakeholders have in general positive associations with innovations in healthcare as innovations help them to deliver good-quality health care and to improve quality of life of their patients. This rational perspective on innovation that aims to make organizations more effective (e.g. VOLBERDA; VAN DEN BOSCH; MIHALACHE, 2014) is more often found as the driver for innovation in health care (e.g. ABMA et al., 2016; ISKE, 2016; DE KOEIJER; HAZELZET, 2017; NILSSON et al., 2017; VEENSTRA et al., 2017).

Since research and development is an important reason of existence of an academic hospital, there is historically within the UMC a natural stronger focus on technological innovations.

However, because of rising health care costs related to technological innovations, advanced insights on health and care and awareness that management innovations could leverage technological innovations, the interest in the theme of management innovation is growing in the UMC. The UMC is involved in the development of various management innovations, like a comprehensive center for kidney transplants that is developed by communities of specialists and patients, or HartNet, a regional hub and spoke structure in which the UMC addresses together with primary facilities care and general hospitals cardiovascular diseases. These projects are based on the principles of value based health care and aim at better health outcomes and experiences for their patients relative to the costs to achieve them.

However, there exists within the UMC certain ambivalence with regard to management innovation. Implementation of management innovations are considered more complex than technological innovations. They take more (also negative) energy, time (years) and money to develop. Inertias in the organization and external environment have to be overcome and different stakeholders in integrated care networks need to be aligned.

The finding that implementation of management innovations is considered complex corresponds with insights from research (e.g. ISKE, 2016; HELLSTRÖM et al., 2015). Management innovations, like the value-agenda as proposed by Porter and Lee (2013),

typically contain collaborations between multiple stakeholders in integrated care networks, consisting of multiple interdependent and mutually reinforcing components: organizing around patients' medical condition rather than physicians' medical specialty, measuring costs and outcomes for each patient, developing bundled prices for the full care cycle, integrating care across separate facilities, expanding geographic reach, and building an enabling IT platform (PORTER; LEE, 2013). However, for such a concept to function stakeholders need first to have a shared objective, a shared understanding of the concept and a willingness to collaborate. Therefore, the process along which management innovations evolve is essential to bring stakeholders with different perceptions and understandings of the management innovation concept together.

Management innovation is characterized by two important attributes. The first is that is intrinsically intangible (e.g. BIRKINSHAW; HAMEL; MOL, 2008; VOLBERDA; VAN DEN BOSCH; MIHALACHE, 2014) which introduces the use of more subjectivity by stakeholders in the implementation process (e.g. WALKER; CHEN; ARAVIND, 2015; BIRKINSHAW; HAMEL; MOL, 2008) to legitimize the innovation than in case of a technological innovation, which is more observable and factual. The second attribute is complexity. To establish an integrated care network to function, many actors and factors interact and many necessary actions for establishment of the integrated network are taking place simultaneously, spread over different organizations and domains of the health spectrum. Some actions are beyond the influence of single organizations, e.g. the need for adjustments in legislation or new payments models like bundled payments, others happen spread in diverging and converging patterns over time (e.g. VAN DE VEN et al., 1999). It becomes unpredictable what actions or what stakeholders cause what outcomes. This phenomenon is labeled complexity (e.g. SNOWDEN; BOONE, 2007; VAN DE VEN et al., 1999; BRAITHWAITE et al., 2018). Both the innovation process (e.g. VAN DE VEN et al., 1999) and the health sector (e.g. GLOUBERMAN; MINTZBERG, 2001a) are considered highly complex, and outcomes of actions hence unpredictable. The implementation is difficult to align and certainly not a linear stepwise process.

Based on insights from chaos -and complexity theories and social constructivism, scholars of unplanned or continuous change (e.g. VAN DE VEN et al., 1999; WEICK; SUTCLIFFE; OBSTFELD, 2005; HOMAN, 2005; BOOM, van den, 2007; WIERDSMA; SWIERINGA, 2002) argue that sense making, the attribution of meaning to perceptions, is essential in

situations of high complexity. Change does not happen in a vacuum, but emerges in interaction with other actors in the organization and its local context. Therefore, the innovation process has an important organizing function in letting the intangible and complex management innovations emerge from interactions between stakeholders. In these interactions or sense making processes, in which stakeholders discuss with each other the concept of the management innovation and attribute meaning to their perception, the management innovation gets a face (WEICK; SUTCLIFFE; OBSTFELD, 2005; HOMAN, 2005).

The examples of the heart rehabilitation program, HartNet and comprehensive centers demonstrate that over time management innovations are gradually being adopted and implemented and that mind shifts from an orientation on treating disease towards quality of life are taking place.

It was observed that sense making processes had an important role in the implementation process of the heart rehabilitation program. Over time the idea spread and developed from one inventor (the thorax surgeon) to a small coalition (the thorax surgeon, the business manager, the UMC staff and the group of eight that went to Volterra) and to the rest of the organization in the Thorax Center and Rehabilitation Center. The innovation process evolved as an emergent, non-linear and self-organizing process (e.g. VAN DER VEN, 1999; WEICK; SUTCLIFFE; OBSTFELD, 2005; HOMAN, 2005) and followed roughly the process phases of innovation (motivation, invention, implementation and labeling) (e.g. IDENBURG; PHILIPPENS 2018; MINKMAN et al, 2013; VOLBERDA; VAN DEN BOSCH; MIHALACHE, 2014; BIRKINSHAW; HAMEL and MOL, 2008). Every time that the idea was shared with new people (first, the surgeon with the business manager, then the UMC staff, followed by the group of eight and finally the other colleagues at the Thorax Center and the rehabilitation center), professionals embrace the innovation (or not) as it makes sense to them and resonates with their personal and professional vision and values (e.g. WEICK; SUTCLIFFE; OBSTFELD, 2005; HOMAN, 2005). A first element of sense making was that the idea of pre- and postoperative rehabilitation made intuitively sense to them and corresponded with people's values and vision on health and care. When the group of eight visited Volterra and saw the example of the Italian rehabilitation clinic they were

immediately convinced that it was something good for their cardiac patients. Seeing was believing. A second element of sense making was observed when the colleagues of the thorax center and the rehabilitation center who went together to Italy, but hardly knew each other, indicated that, more important than elaborating together the joint care concept, was to know each other as a person and professional, to understand each other's way of thinking, vision, values and ideas. That happened there in Volterra at night drinking something together, but also in the meetings. A third element of sense making concerned the content of the program that converged, through discussions, to shared insights. The content that emerged was more based on what seemed plausible to the group than based on hard scientific evidence, guidelines and protocols (e.g. WEICK; SUTCLIFFE; OBSTFELD, 2005; KYRATISIS; AHMAD; HOLMES, 2014)). A similar phenomenon could be observed later in the implementation phase where the nurses of the UMC thorax center and the rehabilitation center visited each other's sites. The site visits resulted in knowing each other and insights, understanding and appreciation for the colleagues and the other location. Presuppositions, fears and feelings of not being in control or capable to attend the new patients in the post-rehabilitation process diminished over time by working together and training. The observations can be interpreted as enacted sense making or organizational learning (TSASIS, 2013) processes that do their work. Very opposite cultures of the surgical thorax center and the rehabilitation center aimed at quality of life demonstrate that sense making processes bridge distances that might seem far at first sight. Sense making is an iterative and interactive process that, if enacted well, can bring people with different professional backgrounds (e.g. COLLDEN et al., 2017; KYRATISIS; AHMAD; HOLMES, 2014) and concepts, in this case the integrated rehabilitation program, together. The observations illustrating how the new rehabilitation program comes into being in the real world with all its complexities follow Van de Ven's (1999) innovation theories on complexity and theories on sense making and unplanned change (e.g. WEICK; SUTCLIFFE; OBSTFELD, 2005; HOMAN, 2005). It is not the hard factors like a mission statement, strategy or a definition of the care path, but soft, subjective, intangible factors as trust, team spirit, shared values that let the transformation emerge (IDENBURG; PHILIPPENS, 2018).

Sense making is often a spontaneous process that happens anywhere and anytime. But it can also be stimulated, by initiating the debate and by setting the pre-conditions. The literature on

innovations in health care (e.g. DE KOEIJER; HAZELZET, 2017; VEENSTRA et al., 2017, ISKE, 2016) mention a tendency for top-down imposed approaches. If an idea is imposed top down, but does not resonate with the values and vision in the organization, sense making processes in the organization work against the proposed innovation, as was seen in the case-study where VBHC proposals from the insurers were put aside, because the UMC staff did not identify themselves with the perceived objective of the insurer. The mentioned tendency for top-down implementations of innovations in the health sector may also explain its limited success in implementing them.

As observed in the UMC by one of the respondents, management innovation cannot be made or imposed, but develops over time through interactions between stakeholders. In the UMC innovation is strongly related to entrepreneurship of professionals in the organization who are encouraged to seek constantly new ways to improve quality of life for their patients and delivery of health care. The focus of the management innovation is therefore merely a focus on creating the ability in organizations to employ new management ideas for modifying and improving its structure and processes to enable continuous strategic renewal and organizational change (VOLBERDA; VAN DEN BOSCH; MIHALACHE, 2014) than on developing a single management innovation. The UMC staff strives to support this vision with a servant leadership style and by setting the pre-conditions that enable the employees to do their work.

The critical success factors that furthered or impeded the adoption and implementation of the pre- and postoperative rehabilitation program were categorized in three factor groups that together determine the readiness of an organization for change (AJZEN, 1991): *willingness* to change, *necessity* to change and *ability* to change. The adoption and implementation of the rehabilitation program was primarily driven by a *willingness* to change. Factors that enhance the *willingness* to change mentioned in the interviews were the intrinsic drive in the organization to improve the quality of life for patients, entrepreneurship and the involvement of the people in the change process. The critical success factors with an impact on the *ability* to change mentioned in the interviews were the servant leadership style in the UMC encouraging entrepreneurship, the ability to bend counterproductive institutional elements in the external and internal environment, measuring innovation outcomes and the ability to

change people's behavior. The *necessity* to change was not the driving force behind this project, although in the near future financial constraints (e.g. as seen in HartNet contract with insurers) and new insights on how health care can create better outcomes for less costs (e.g. on the possibilities of secondary prevention) may urge the UMC organization to adopt management innovations as the rehabilitation program at a faster pace.

The results of the pre- and post cardiac rehabilitation program are promising. Patients are very enthusiastic. According to the health professionals who work with these patients, their enthusiasm says everything and shows that the program is a success. Quantitative and financial results of the rehabilitation program are not available yet. Respondents emphasize the necessity of evidence based on quantitative and financial outcomes in order to convince payers and colleagues in the UMC of the added value of the program. Evidence that it works furthers a culture in the UMC that is more oriented at quality of life and continuity of this program in contracts with insurers. However, measuring outcomes and costs across the different health domains and measuring constructs as quality of life remains complex.

The case-study of the pre- and postoperative rehabilitation program give some important insights on the role of management innovation in making health systems sustainable and how they can be adopted, implemented and steered. Their implications are discussed in chapter 4.

3.7.1. Reflections on the research project

Contribution/ originality

Despite the need to transform health systems and implement new best practices, such as value based health care (VBHC), the health sector is not yet very successful in applying new methods: best practices are spreading at a low pace (IBO, 2017). Especially, the field of management innovation, a relatively new and fragmented research field (e.g. BIRKINSHAW; HAMEL; MOL, 2008; VOLBERDA; VAN DEN BOSCH; MIHALACHE, 2014; ČERNE; KAŠE; ŠKERLAVAJ, 2016), is under explored.

This case study aims at exploration of perceptions of stakeholders who have been involved with the development and implementation of the pre- and post operative cardiac rehabilitation

program, a management innovation that is based on principles of VBHC. The project is successfully implemented. Patients and involved professionals are enthusiastic about the new form of cardiac rehabilitation and although the results cannot be quantitatively measured yet, they seem promising.

Interviewing stakeholders about their perceptions of management innovations and their implementation is relevant as we know relatively little about stakeholders' perceptions of management innovations, such as VBHC (eg NILSSON et al., 2017; DE KOEIJER; HAZELZET, 2017; ABMA et al., 2016) and governance in healthcare (e.g. VEENSTRA), while they are the ones who make the innovations happen in interaction with patients and other stakeholders in integrated care networks.

Interviewing stakeholders involved in a successfully implemented management innovation informs us about how the implementation process has evolved and enables us from a 360-degrees inside-out perspective to follow the innovation from vision formation, through the innovation process to results and critical success factors. Their perceptions provide insight into how they 'frame' the innovations and their importance, their motives to commit themselves to the innovation and why they do what they do. The case study contributes to a more holistic understanding from the perspective of the involved stakeholders of the coherence of many aspects related to the implementation of the management innovation. This case study traverses and links various disciplines, management innovation studies and change management studies, that are complementary and explore from different angles the theme of management innovation and its implementation. The case study contributes to showing the coherence and complementarity of the different disciplines.

Implementation of management innovations is often experienced as difficult and takes a serious time and effort from organizations. The case study provides insight into the underlying change process and change mechanisms, which predominantly have an emergent and unplanned character. Management innovations are characterized by a high degree of intangibility and complexity. The innovation process makes the invisible visible and brings multiple stakeholders and complex organizational concepts within that complexity together. Understanding this innovation process is therefore important. The case study shows that stakeholders have different perceptions of management innovations and their role in the organization and use their subjective perceptions to legitimize and shape the intangible innovations for themselves and in interactions with each other. This is done in iterative and

interactive sense making processes in which stakeholders with different interests and different understandings of the management innovation that might bind them come together. These processes are largely spontaneously driven by an intrinsic motivation of the stakeholders to contribute to better quality healthcare care and quality of life for their patients. With insights that these sense making processes take always and everywhere place, organizations can also create the conditions and culture to let these sense making processes happen and contribute to the organizations' objectives. The findings that 'soft' subjective sense making processes are fundamental for change may give food for thought in health organizations and in further research as many organizations still tend to impose new practices top-down and steer on hard, rational factors as strategy, processes and systems. This case study may also be of complementary use to the recipes of the more prescriptive VBHC strategies (aimed at the 'what?' of the change) that tend to steer on 'hard' factors (outcomes and costs measurements, definition of processes in integrated practice units, information systems etc.) and forego the real world of organizations. Understanding why people feel committed to the change, gives opportunities to connect the hard technical side of concepts as value based health care with values that matter to people who work in health organizations and who are the pivotal point in bringing value based healthcare in practice.

Suggestions for further research

Further research into the role of innovation and implementation processes of management innovations in health care and underlying change mechanisms can be an essential step forward to implement with better odds for success the intrinsically intangible management innovations in the health care sector with all its complexities. Awareness of and further understanding of the impact of these change processes could help leaders, health professionals, administrators and researchers in the health care sector to address innovation in management, organization and strategy in health care more effectively and contribute to more sustainable health care systems.

This research project showed that different types of professionals perceive and frame the world around them, their work and their role differently. The difference is related to different backgrounds in education, culture, professional training and work experience, and so on. Further exploration of the role of sensing ('how do we perceive the world around us and our

role in it?') and the role of sense-making ('how do we bring the concept and stakeholders together?') could contribute to more effective implementation approaches of management innovations in health care.

Limitations of this research

This study has a broad scope and is explorative in character. It tries to relate the role of management innovation and underlying change and implementation processes to sustainability of health systems. Where its contribution is shining light on the relations between different fields and topics that tend to be only studied separately, its limitation is the inherent limited in-depth exploration of the single fields. Further research is necessary to generalize findings.

Although theoretical saturation has been achieved during the interviews and the subsequent analysis, the field study has been limited in scope and time in the sense that two stakeholder groups that work together on a relatively concise example of value based health care may not reveal all aspects and other complexities that may appear in more comprehensive and complex value based health care projects.

4. Conclusion

4.1. Introduction

Innovation may contribute more to the sustainability of health systems than it does nowadays. However, how innovation in healthcare really works, is at best partly understood and relatively few organizations are successful in implementing new practices. Especially management innovation - that is 'the invention and implementation of a management practice, process, structure, or technique that is new to the state of the art and is intended to further organizational goals' (BIRKINSHAW; HAMEL; MOL, 2008) - is relatively an unknown and young field that could have, both complementary to technological innovation, but also on its own, a major impact on innovation results in healthcare.

4.1.1. Aim

It is the aim of this project to explore stakeholders' perceptions of management innovation in health care. What does it entail? How does it work and how can it be steered? This understanding could be valuable if we succeed better in bringing management innovation in practice in health care.

4.1.2. Research question

This study aims at answering the following research question:

What is the role of management innovation in making health systems sustainable?

To answer the research question five sub-questions have been explored in a literature and field study:

1. Why do we innovate? What are stakeholders' perceptions of innovation in healthcare?
2. How do management innovation processes in health care typically evolve? How are these processes steered? Who is involved?
3. What are critical success factors for management innovation in health care?
4. What are results of management innovation in healthcare? What results are attributable to management innovation?
5. Can the health sector steer more effectively in developing, adopting and implementing management innovations that make health systems more sustainable? If so, how?

4.1.3. Methodology

The literature review and case-study have been guided by the five research sub-questions. This research project has an exploratory and qualitative character. The literature review has had a broad scope and attempted to get a more holistic and qualitative understanding of the phenomenon of management innovation in health care by exploring and connecting different scientific fields: innovation studies with a focus on management innovation; organization and change management studies with a focus on 'unplanned change; studies at concepts of value based health care and its implementation in organizations; and implementation science aimed at implementation of new management practices in health care. It should be observed that there exists some overlap between the different academic fields and the fields are all relatively young and arose in the last two decades. The value based healthcare and implementation science fields have a specific focus on health care, the other fields are not sector specific and also include studies at innovation in health care.

The field research at the adoption and implementation of a pre- and postoperative rehabilitation program in an university medical center in the Netherlands was done by a series of qualitative semi-structured interviews with stakeholders involved in the program and its implementation. The interviews were recorded with informed consent of the respondents, transcribed and analysed using software for qualitative research.

4.1.4. Management innovation and management innovation in healthcare

Birkinshaw, Hamel and Mol's (2008) definition of management innovation was the departure point for this exploratory study. Management innovation is in this definition defined as 'the invention and implementation of a management practice, process, structure, or technique that is new to the state of the art and is intended to further organizational goals' (BIRKINSHAW; HAMEL; MOL, 2008).

Management innovation is a somewhat pluriform and intangible concept and can be interpreted as a strategy to further organizational goals, an innovation process or its outcome, the innovation – here understood as a new management practice, that is implemented. There is a growing awareness in organizations that management innovation can provide a long-term competitive advantage as it is as a resource valuable, rare, inimitable, and firm specific (HAMEL, 2006; BIRKINSHAW; HAMEL; MOL, 2008). To sustain organizational performance and competitiveness a continuous stream of management innovations over time is essential (DAMANPOUR; ARAVIND, 2012). The focus on the management innovation studies is therefore also on the creation of an innovation capacity in the organization that enables continuous strategic renewal and organizational change.

Also in the health sector management innovation has gained interest. Rising health care costs, to a large extent caused by technological innovations, cause health systems to become no longer affordable and therefore not sustainable. In the last decade also our vision on health and care has changed. With ageing populations and a growing percentage of people with one or more chronic health conditions, the health sector makes a shift from a focus on treating disease towards a focus on health, vitality and quality of life. New technologies enable shifts from treatment and care in health institutes to treatment at home. Combinations of new organizational models and new technologies, like in the value based healthcare concept (PORTER; LEE, 2013) strive to achieve simultaneously the Triple Aim of better health outcomes and better patient experiences for lower costs. The value based health care concept comprises six interdependent and mutually reinforcing components: organizing around patients' medical condition rather than physicians' medical specialty, measuring costs and outcomes for each patient, developing bundled prices for the full care cycle, integrating care

across separate facilities, expanding geographic reach, and building an enabling IT platform (PORTER; LEE, 2013). Theoretically, the concept is promising and is based on how we understand health and care today. However, implementation may be complex. To benefit optimally from the concept, health care providers need to work together in integrated care networks that cover the health care continuum of promotion, prevention, cure, care and rehabilitation to attend the increasing needs for social and health care services. For optimal results the six interdependent components need to be aligned between the different stakeholders in integrated care networks. In today's fragmented health care landscape, implementing the value based health care concept is easier said than done. For the concept to function, the stakeholders in integrated care networks need at least shared interests and objectives, a shared understanding of the concept consisting of multiple interdependent components and to work together.

In this research project the pre- and postoperative cardiac rehabilitation program at the university medical center is based on the principles of value based healthcare and is used as a 'proxy' to explore the concept of management innovation in healthcare.

With this background and context on management innovation in healthcare, the research sub-questions will be answered .

4.2. Why do we innovate? What are stakeholders' perceptions of innovation in healthcare?

Innovation is an umbrella term. People and organizations may have quite different ideas of what innovation in health care is and could contribute to their work. Understanding their visions and perceptions of innovation in health care gives insights why they engage in innovation. Perceptions of stakeholders can be used as a collective intelligence to understand what makes innovation in health care complex.

Only few relatively recent studies in the literature have explored the perceptions of stakeholders on innovation (ISKE, 2016; ABMA et al., 2016; JANSSEN, 2016) and implementation of various types of new management practices in (e.g. DE KOEIJER; HAZELZET, 2017; NILSSON et al., 2017; HELLSTRÖM et al., 2015; VEENSTRA et al., 2017; KYRATIS; AHMAD; HOLMES, 2014; COLLDEN et al., 2017).

The studies inform us that stakeholders regard innovation in health care as necessary (ISKE, 2016) and as something inherently positive (VAN DE VEN et al., 1999; JANSSEN 2016). Stakeholders in health care are intrinsically motivated to contribute to good-quality care and quality of life of patients and consider it necessary and important to innovate and improve. The association that innovation brings something positive is related to the fact that innovation tends to be presented as a solution for challenges that health systems currently face and the fact that an innovation only becomes visible if it is a success. The innovation attempts that fail, remain invisible.

In health care stakeholders tend to associate innovation more with technological innovations (JANSSEN, 2016) and relatively little research has been done at implementation of system and process innovation (ABMA et al., 2016).

In the case-study at the rehabilitation program in the UMC is seen that technological innovation has a certain dominance compared to management innovation. In trade-offs between technological innovation and management innovation, technological innovations have often the preference as they pay-off earlier and are easier for health organizations to implement.

However, rising health expenditures in health systems, to a large extent caused by technological innovations and expensive therapies and treatments developed for relatively small patient populations, urge health systems and organizations to rethink this trade-off.

Although health organizations may have interests and old convictions that tend to maintain the status quo in their organizations, our understanding how health and care can be organised differently is shifting. Management innovations, as seen in the regional HartNet that is committed to no growth in health expenses for the coming years and improvements in quality of life for cardiac patients, demonstrate the potential for making health systems sustainable. The comprehensive centers highlight developments in the real world, where technological innovation, e.g. organ preservation techniques, and management innovation, e.g. the

formation of communities with patients, often go hand in hand. One type of innovation leverages the other.

If external pressures of limited financial resources increase or internal visions how health and care can be organized better, advance, the necessity and ability of the organization increase and are more likely to overcome or address those institutional elements in the internal organization or external environment that tend to maintain the status quo.

The studies at stakeholder perspectives on innovation in health care (e.g. ISKE, 2016) also inform that stakeholders indicate that the health sector is not successful in implementing innovations. The stakeholders say that the sector struggles with topics as collaboration, open innovation and implementation of innovations. The studies also bring forward that new practices in health care tend to be imposed top-down (e.g. VEENSTRA et al., 2017; DE KOEIJER; HAZELZET, 2017) using a command and control approach. They indicate that stakeholders in health care have difficulties to grasp the bigger picture and lack system thinking that is necessary to address the multi-stakeholder setting and complexity related to innovation in health care. A lack of trust and distances between stakeholders complicate implementation of integrated health systems (ISKE, 2016).

Furthermore, the stakeholders inform that institutional factors, as a lack of competition between suppliers in the oligopolistic health market, insufficient financial and existential necessity of suppliers to compete and payment models and contracts with payors (health insurers, municipalities) that do not remunerate innovations that contribute to more efficient and qualitative better care, withhold innovation.

The studies that explored stakeholders' perceptions of implementation of concepts of value based health care and other new practices in single organizations (e.g. DE KOEIJER; HAZELZET, 2017; NILSSON et al., 2017; HELLSTRÖM et al, 2015; COLLDEN et al, 2017) observe that stakeholders have partial and different understanding of the concept of value based health care and relate it differently to their different professional logics. For example, value, defined by Porter (2013) as health outcomes relative to the costs incurred to achieve them, is associated by the health professional with quality of care and quality of life for the patient (e.g. DE KOEIJER; HAZELZET, 2017; COLLDEN et al, 2017) and by management professionals more frequently associated with monetary values or more

efficiency (e.g. COLLDEN et al, 2017). Various studies (KYRATSIS; AHMAD; HOLMES, 2014; HELLSTRÖM et al, 2015; COLLDEN et al, 2017) demonstrate that different stakeholder groups have different professional logics and that a shared vocabulary (e.g. HELLSTRÖM et al, 2015) used may contribute to openness of stakeholders to new care concepts.

Awareness that these different perceptions, professional logics and vocabulary add up to different understandings of concepts of integrated care by the stakeholders, explains the importance of an implementation approach where these different perceptions converge. Integrated care concepts where multiple stakeholders are supposed to work together in integrated care networks with many interdependent and reinforcing components, can only function if stakeholders have a shared objective, a shared understanding of the concept and willingness to collaborate.

Seeing and understanding health and care in an integrated or more holistic way is not easy. Both the health sector and the innovation process are characterized by complexity. Many actors and factors interact in organizations and innovation processes and it is often not possible to explain who or what causes what outcome. Glouberman and Mintzberg (2001a) mention health care as one of the most complex systems known to contemporary society that consists of four separated worlds (with “cleavages in between) or silo’s of cure (doctors), care (nurses), control (managers) and community (trustees). The complexity is situated in the interconnectedness of the four worlds through a care process that crosses the silos. Moreover, Van de Ven et al. (1999, see: Figure 4 in Chapter 2) inform us about the divergence between assumptions and perceptions of innovation processes in literature and how innovations evolve in practice.

In this context of complexity and the different perspectives of the different stakeholder groups new practices that are imposed top-down are likely to fail. They do not resonate with the vision, values, professional logics and vocabulary of the stakeholders and the stakeholders in healthcare persist to stay in their different silos. Health professionals indicate that top-down steering does not align with their professionalism and autonomy. It takes away energy and creates distrust and does not create a culture where people meet, understand, trust each

other and work together (e.g. VEENSTRA et al., 2017; DE KOEIJER; HAZELZET, 2017). The stakeholders and concepts of integrated care do not come together.

Based on insights from chaos -and complexity theories and social constructivism, scholars of unplanned or continuous change (e.g. VAN DE VEN et al., 1999; WEICK; SUTCLIFFE; OBSTFELD, 2005; HOMAN, 2005; BOOM, van den, 2007; WIERDSMA; SWIERINGA, 2002) argue that sense making, the attribution of meaning to perceptions, is essential in situations of high complexity. Change does not happen in a vacuum, but emerges in interaction with other actors in the organization and its local context.

This sense making process was also observed in the case-study at the rehabilitation program where the respondents emphasized the importance to know, understand and trust each other before they started to collaborate and to elaborate the content of the joint rehabilitation program.

A final perception of management innovation that emerged from the interviews in the UMC is that management innovation is to a certain extent something intangible and is merely an organizational capacity, culture or entrepreneurial mindset of people working in the organization that leads to organizational innovations and vice versa. It is rather an emergent, continuous and non-linear process that constantly improves and changes how we organize and work.

4.3. How do management innovation processes in health care typically evolve? How are these processes steered? Who is involved?

Our understanding of the innovation process through which management innovations emerge is still limited for various reasons. First, management innovation in general and more specific in the field of healthcare, known as implementation science, is relatively a young research field. The topic has only gained interest from scholars in respectively the last 20 (e.g. DAMANPOUR; ARAVIND, 2012; BIRKINSHAW; HAMEL; MOL, 2008) and 10 years (BRAITHWAITE et al., 2018).

Second, research in management innovation has been fragmented and a lack of uniform definitions and approaches from different disciplines has caused slow progress in research (e.g. VOLBERDA; VAN DEN BOSCH; MIHALACHE, 2014; ČERNE; KAŠE; ŠKERLAVAJ, 2016).

Third, there is also a difference what exactly is being studied in management innovation studies and for example in implementation science. The first addresses the strategic process in organizations that seeks to achieve a competitive advantage, the second field explores the role of underlying mechanisms of sense making and organizational learning in implementations of a new practice. To implement a new management practice in healthcare, both disciplines are necessary.

And finally, management innovation's intangible nature limits our understanding and gives room for more subjective and different interpretations what it is and what value it will contain for the organization.

As seen in the previous section, complexity is an important element in understanding the innovation process in healthcare. In fact, it may be seen as a 'double complexity'. The field is extremely complex (e.g. GLOUBERMAN; MINTZBERG, 2001a) and innovation processes are highly complex and unpredictable (e.g. VAN DE VEN et al., 1999; WEICK; SUTCLIFFE; OBSTFELD, 2005; BRAITHWAITE et al., 2018). Many attempts to implement an innovation in healthcare fail as interventions are based upon a vision that there exists a direct and causal relationship between an intervention and its outcomes. Nowadays there is growing awareness that this mechanistic or reductionist view may have worked in the development and implementation of new technologies, but that it is no longer realistic in complex, open and social living systems as the health sector is today. The relationships among the many and different stakeholders in and around health systems lead through iterative and interactive processes of learning (e.g. WIERDSMA; SWIERINGA, 2002), sensemaking (e.g. WEICK; SUTCLIFFE; OBSTFELD, 2005; HOMAN, 2005), improvisation and self-organization to emergence of new patterns and change. The different meanings and perceptions are no problem to the organization, but an asset that catalyzes the sense making process. Systems are constantly in a flux and stakeholders are likely to approach innovation in health care by a process of trial and error. Do more what leads to positive outcomes and less what leads to negative outcomes (VAN DE VEN et al., 1999). Although

innovation success remains largely unpredictable, management can increase its odds by learning from experience in trial and error situations.

The case-study at the rehabilitation program in the UMC demonstrated the importance of actions of enacted sensemaking between the stakeholders. To be able to work together on an integrated care path, the different groups need to know each other and to get a shared understanding of the concept. They indicate that, more important than elaborating together the care concept, is to know each other as a person and professional, to understand each other's way of thinking, vision, values and ideas. That happened there in Volterra at night drinking something together, but also in the meetings. Over time the content of the program converged to their shared insights. The content that emerged was more based on what seemed plausible to the group than based on hard scientific evidence, guidelines and protocols. The case study showed that sense making processes bridged different cultures and were used for organizational learning. It is not the hard factors like a mission statement or definition of the care path, but soft, subjective, intangible factors as trust, teamspirit, shared values that let the transformation emerge.

Scholars of management innovation (e.g. BIRKINSHAW; HAMEL; MOL, 2008; VOLBERDA; VAN DEN BOSCH; MIHALACHE, 2014) developed frameworks to describe and analyse the management innovation process through the consecutive phases of the innovation process: motivation, invention, implementation, theorization and labeling. Greenhalgh et al. (2004), Minkman et al., (2013) and Idenburg and Philippons (2018) describe four similar process phases along which organizations typically pass during the innovation process of a management innovation. The boundaries between the different phases are more blurry and the order of the activities may sometimes be reverse as setbacks in innovation processes occur (VAN DE VEN et al., 1999).

The case-study at the rehabilitation program affirmed the pattern and order of the descriptions of the management innovation process. It is observed that the major part of the innovation process emerges from the people working in the organizations, without management telling them to do so. It is an individual's or group of individuals' awareness and intrinsic motivation where it starts. Over time, the first idea becomes a new management practice that gets its form, its vocabulary and meaning through interaction among a growing group of people involved with the project. From the individual the idea spreads to the small initial coalition,

to the project team who turns it into a new management practice and it gets further shaped by all who work with it.

Management's role is limited and more guiding than directive. In the first phase, management encourages the initial coalition to continue if the idea is congruent with the organization's vision and values. Management gives support, room and resources to explore the idea further. The implementation phase is the most makeable phase. It is directed at developing the hardware and infrastructure that is conditional for the new practice. Management assures that it is done. And in the fourth phase the focus of management is again on letting the self-organizing process do its work while monitoring how the process evolves. Management's role is more aimed at guarding that the organization does not return to the old situation and resolving bottlenecks that prevent progress towards the envisioned new situation.

The innovation emerges through the different stages of the innovation process in a self-organizing sense making process that is determined by 'soft' human and subjective factors. Innovation is more related to how change in organizations works than it can be planned. People make sense of what they see and act and interact upon the meaning they attribute to a situation or proposed change. Alignment with their vision and values determines their commitment.

Sense making happens anywhere and any time. It mostly happens spontaneously. If we are aware that it happens, we can also influence it. Knowing that sense making is omnipresent can be used to the organization's benefit by letting people talk with each other. A few examples where sense making could do its work came forward in the case study. For example, the researcher in the UMC could speak with the supermarket manager in a certain neighborhood how citizens can be guided in healthier choices at the supermarket. Crossing their worlds to improve application of knowledge on healthy living could advance both their insights. The same goes for the nurses in the UMC that indicated that they would like to be involved in innovations at an earlier stage, or health professionals that would like to hear more about the findings of the research of the cardiac rehabilitation program. More frequent feedback from the researchers in the pre- and post operative rehabilitation could create commitment of the professionals in the organization and could contribute to mindshifts from a focus on curative medicine toward a focus on quality of life along the way.

4.4. What are the critical success factors for management innovation in health care?

Management innovations in health care, like concepts of value based health care, tend to involve multiple stakeholders, multiple interrelated and mutually reinforcing components in the concept and require collaboration between the stakeholders in an organization, between organizations, in integrated care networks or eco-systems that attend together patient populations in a certain region or with a certain type of health condition.

In this sub-question is explored what it takes to further management innovation in organizations, between organizations and in eco-systems. Questions that led the literature and field study were: What is the impact of entrepreneurship and public policies on management innovations in the health sector? Do innovations evolve spontaneously (attributable to entrepreneurship)? Or are they the fruit of coordinated public policies? What is the role of innovation eco-systems that bring together stakeholders and connect entrepreneurship, new technologies and public policies?

The majority (75-80%) of non-planned changes happen spontaneously. (HOMAN, 2005) In the previous section was analysed that management's role in innovation processes is a limited, more guiding role aimed at creating the conditions under which the emergent innovation process can take place. Visions, values, attitudes and behavior of people involved determine if they really interact with each other and if the process of sensemaking through enactment can take place.

First the critical success factors on organizational level were explored. Volberda and Bosma (2011) identify four management innovation capacities – dynamic management, flexibility in organizing, smarter working and co-creation - that contribute to a mindset, competences and skills in organizations that enable organizations and the people who work there to address in an open and flexible way the needs and opportunities to innovate in interaction with other stakeholders. These management innovation capacities are also referred to as “entrepreneurship” and are fundamental to let innovation processes emerge.

In the case-study at the rehabilitation program the UMC explicitly chooses to stimulate an entrepreneurial mindset or culture in the organization in the assumption that this setting has the best odds to let innovations in the UMC emerge.

The ‘Theory of Planned Behavior’ of Ajzen (1991) explains that three factors determine the readiness of someone to change his behavior: willingness (attitude), necessity (subjective norm) and ability to change (perceived behavioral control).

In the case-study at the UMC, Ajzen’s theory was used to group the main critical success factors mentioned by the respondents. The driving factors of the pre- and post rehabilitation program have primarily to do with the *willingness* to innovate: intrinsic motivation to make health care better, entrepreneurial and an implementation process that makes sense to the people involved. Without this willingness nothing would have happened. The *necessity* to change was less an issue in the case of the rehabilitation program. In the initial period, some slack in a budget could pay the bill. However, situations with tighter health budgets will urge faster adoption of organizational innovations that contribute to better outcomes for less costs than in a situation without the necessity. The factors related to the *ability* to change mentioned were stimulation of entrepreneurship, ability to measure and monitor outcomes of innovation and role-modelling of pursued behavior drive the organizational innovations. On the other hand, institutional elements, both in the external and internal environment, undermine the innovation efforts and work in the opposite direction. It depends on how strong the institutional counter forces are, whether the innovation stops, or is being slowed down. If the necessity to change increases, the institutional forces will diminish over time and the innovation comes into being. Under pressure everything becomes fluid.

Various studies (GLOUBERMAN; MINTZBERG, 2001a and 2001b; VEENSTRA et al., 2017; LITH, 2017, BERWICK, 2016) inform us about visions from the health care field how new models of health care could be addressed more effectively. A first element is respect for and a better use of the professionalism and craftsmanship of the health care professionals. A second element is the collaboration between all stakeholders in a setting of a smaller, more personal scale creating shared values and understanding. A third element is establishing a culture that furthers continuous improvement. A fourth element is re-establishing the relationship, position and mutual respect between health professionals and management.

With regard to transformation at an aggregated level in society, management literature on transformations (e.g. SCHARMER; KAUFER, 2013; ROTMANS, 2014; GORE, 2013) illustrate that steering mechanisms and governance models in society have developed from paternalistic state-centric governance-models (generation 1.0) to a free market model based upon competition (2.0, ego-system), to a social market (3.0, in essence stakeholder capitalism with the network of all stakeholders taking care of externalities of this competition model) and ultimately to an eco-system awareness (4.0) aimed at wellbeing for all based on entrepreneurship and co-creation between knowledge institutes, business, government and the civil society.

Similar to individuals in organizations who compete for the same scarce resources and act and interact in, often non-linear, sense-making processes, stakeholder groups in eco-systems or society do the same. The same change mechanisms apply. Top down models and command and control approaches are not likely to manage transformation processes well. Instead, a carefully designed and orchestrated process approach with space for co-sensing and co-creation between its stakeholders could let emerge (the content of the) transformation.

It can be concluded that, both at organizational and sector level, the innovation process in which stakeholders meet, discuss and work together on new practices through interaction and enacted sensemaking innovations is elementary in adoption and diffusion of innovations. Innovations become adopted at an individual level in an organization, brought to a next level and spread in and between organizations, within the sector and society.

Innovation eco-systems and public policies may facilitate this innovation process, but are no alternative for this, in essence, entrepreneurial process. Innovation eco-systems augment the chances that stakeholders with a potential shared interest and relevant expertise meet each other. And policies aim at taking away the anomalies in prevailing regulations and financial structures or at stimulating stakeholders to engage in innovation processes if the scope of the innovation is beyond the impact of the single organization.

At health system level, health systems can be considered complex adaptive systems, that change under the *willingness* to change (intrinsic motivation of health professionals to deliver good quality health care and to improve the quality of life of their patients; and

entrepreneurship), the *necessity* to change (limited resources and convictions that health and care can be organized better) and the *ability* to change (room for entrepreneurship and developing new professional logics to overcome institutional barriers). Organizations change in units of one, individual for individual. Health systems change organization for organization. It depends on the equilibrium between *willingness*, *necessity* and *ability* to change of all stakeholders involved, how fast health systems actually may change.

4.5. What are results of management innovation in health care?

Management innovation remains highly intangible and subjective. It is difficult to measure and it is difficult to unravel in management innovations, that often also contain elements of technological innovation and where many stakeholders collaborate in more holistic approaches of health and care, who or what exactly causes what effect and outcomes.

The case-study at the rehabilitation program demonstrated both the complexity and relevance of measuring results of management innovation. Although it is too early for a quantitative and financial assessment of health outcomes and costs, patients and health professionals are very positive about the results as they perceive the program's contribution to improved quality of life of patients. Being able to measure outcomes and costs of the program, and especially intangible constructs as quality of life, is essential to convince medical specialists to enrich curative medicine practices with more concern for quality of life of patients and to prove to payors that investing in healthy life-styles and prevention pays off in the lower long term health costs for society.

Three examples of management innovations in health care from across the world give insights that how we understand and organize health care can contribute significantly to bend the upward slope of cost curves that make health systems no longer sustainable, while also improving health outcomes and patient experiences simultaneously. The costs savings generated by management innovations in these examples are tens of percents, a multiple of the costs increases of technological innovation that cause health systems to become no longer affordable.

In these examples the innovations were merely organizational than technological of character, but contained technological elements as well. Both types of innovations are complementary and one type of innovation leverages the other. Where innovation is usually more associated with technological innovation, these examples show that management innovation may be the type of innovation that could firmly contribute to more sustainable health systems and that management innovation is often wrongly being overlooked.

4.6. What is the role of management innovation in making health systems sustainable?

After exploring the vision and perceptions of stakeholders in healthcare on management innovation, the process through which management innovations evolve, the factors that further or impede management innovation and the results that may be expected, it is time to answer the research question ‘What is the role of management innovation in making health systems sustainable?’

As health systems are nearing their limits of affordability due to demographic developments and high costs of technological innovation, choices and trade-offs are necessary to keep or make health systems sustainable. Our understanding of health and care and how it can be organized has advanced. Examples of management innovation demonstrate its potential for the health sector to achieve better health outcomes and patient experience relative to the costs to achieve them.

However, management innovations’ intangible nature and complexity inherent to the innovation process and the health sector makes implementation and steering difficult.

Management innovation is merely a spontaneous, unplanned change process that starts with an intrinsic drive and emerges from how people frame what they see, relate it to their values and act upon it in interaction with others. It is a human, subjective, interactive, emergent, self-organizing process of sensing and sense making that - if aligned with vision, values and

intentions of people - can bring together different stakeholders in joint concepts of integrated care.

Sense making happens anywhere and anytime. Top-down imposed approaches of innovations, as frequently seen in health care, that do not resonate with the vision and values of the involved stakeholders are therefore likely to fail. They do not make sense to them and maintain silos in health care intact.

Approaches of management innovation in which stakeholders understand and acknowledge the presence of complexity and sense making, may have better odds. Leading management innovation processes becomes a matter of guiding and creating room for self-organizing processes in organizations. To innovate in healthcare, health professionals should be involved and preferably put in the lead. They are the ones who will make sense in interaction with patients, colleagues and other stakeholders in the integrated care networks what works and what does not.

To further management innovation in health care, the sector could further the awareness of the role and quality of ‘sensing’ and ‘sense making’ among its stakeholders in innovation processes.

Events and congresses on innovation in health care tend to focus on tangible ‘hard’ factors as strategy and new technologies, but do not often treat the underlying implementation and change processes. However, the last decade, the field of implementation science is addressing this gap.

Education and training, for instance, could contribute to a more systemic vision and understanding of health and care in relation to someone's own role in healthcare. Leadership training could focus on vision, values, attitudes and culture in healthcare organizations. Also entrepreneurial skills, change and implementation skills would be complementary to medical training.

Instruments as patient journeys, storytelling, co-creation and design thinking use the natural impact of (co-) sense making and (co-) creation in innovation implementation trajectories.

Willingness to innovate, driven by intrinsic motivations and by entrepreneurship, and necessity to innovate, driven by increasing health expenditures and opportunities for better outcomes for lower costs, will catalyze management innovation. The ability to innovate will naturally follow the willingness and necessity to innovate.

Exploring further and investing in the potential of management innovation may be a wise choice to make health systems sustainable.

4.7. Recommendations for further research

Contribution / originality

Despite the need to make health systems more sustainable, the health sector is not very successful in implementing new management practices yet. This study explored through a literature study and a case-study at a successfully implemented management innovation stakeholders' perceptions of management innovation in health care. Little is known about stakeholders' perceptions (e.g. NILSSON et al., 2017; DE KOEIJER; HAZELZET, 2017; VEENSTRA et al., 2017) of management innovation yet. Knowing their perceptions is important for a better understanding of management innovation, as they are the ones who make the innovation happen in interaction with patients and other stakeholders in integrated care networks. Their perceptions provide a collective intelligence to explore and locate the critical issues and arguments in the implementation of management innovations in the complexity of the real world. Interviewing stakeholders who were involved in a successfully implemented management innovation informs us about how the implementation process has evolved and enables us from a 360-degrees inside-out perspective to follow the innovation from vision formation, through the innovation process to results and critical success factors. Their perceptions provide insight into how they 'frame' the innovations and their importance, their motives to commit themselves to the innovation and why they do what they do.

The case study traverses and links various research fields, management innovation studies and change management studies, that are complementary and explore from different angles the theme of management innovation and its implementation. The case study contributes to showing the coherence and complementarity of the different disciplines.

Implementation of management innovation is often experienced as difficult. The case-study provides insight into the underlying change process and change mechanisms, which have a predominantly emergent and unplanned character. Perceptions have an important role in the innovation process. Different types of professionals perceive and frame the world around them, their work and their role differently. Management innovations like value based care concepts require, in order to realize the potential synergies of the concept, that stakeholders with different backgrounds develop a shared vision and understanding of the integrated concept and each one's role in the collaboration. Management innovations are characterized by a high degree of intangibility and complexity. The innovation process makes through processes of sense making the intangible visible and brings multiple stakeholders and complex organizational concepts in that complexity together.

The findings that 'soft' subjective sense making processes are fundamental for innovation and change in the complexity of today's health sector may give food for thought to health organizations and in further research at management innovation as many organizations still tend to impose new practices top-down and steer on hard, rational factors as strategy, processes and systems. The findings of the case-study that reveal how innovation and change evolve in a real world with all its complexities may also be of complementary use to the recipes of the more prescriptive value based health care strategies (aimed at the 'what?' of the change) that tend to steer on 'hard' factors (outcomes and costs measurements, definition of processes in integrated practice units, information systems etc.) and may sometimes forego the complexities in the real world of organizations.

Suggestions for further research

Management innovations, like value based care concepts, require, in order to realize the potential synergies of the concept, that stakeholders with different backgrounds develop a shared vision and understanding of the integrated concept and each one's role in the collaboration. Further exploration of the role of sensing ('how do we perceive the world around us and our role in it?') and the role of sense-making ('how do we bring the concept and stakeholders together?') could contribute to more effective implementation approaches of management innovations in health care.

Limitations of this research

This study has a broad scope and is explorative in character. It tries to relate the role of management innovation and underlying change and implementation processes to sustainability of health systems. Where its contribution is shining light on the relations between different fields and topics that tend to be only studied separately, its limitation is the inherent limited in-depth exploration of the single fields. Further research is necessary to generalize findings.

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ANEX

ANEX A – [Interview Guideline]

What is the relationship between technological and management innovation in making healthcare systems more sustainable?

Beforehand:

- Thanks for willingness to do the interview, it will take about 45, max 60 min
- Introduction to MK (FGV / Research about management innovation in health care), cooperation with JH and SD
- Recording of conversation (transcription / analysis / findings are processed on an aggregated level by means of Atlas TI, answers are not traceable to individual respondents, interview reports only shared with research team (MK, JH, SD))

Profile respondent:

- Name:
- Indication age:
- M / F
- Role: (care provider / manager / ...)
- Education:
- Always worked in similar positions?
- How long have you been working at the organization?

1. Why do we innovate? What is the vision of stakeholders on innovation in health care? What images do they have? What is the importance of innovation for their own work / role and in the bigger picture?

- a. What is your overall view on innovation in health care? Which images of and associations with innovation in health care do you have? What do you find important?
- b. What forms and examples of innovation do you encounter in your work? Do you also have a role in them? Who else?

c. You are also involved in the research of the implementation of the cardiac rehabilitation program 'rehabilitation before and after the operation' (HRCTC trajectory), in collaboration with the cardiology and thoracic surgery department of the UMCG performed at the Center of Rehabilitation, location Beatrixoord. Is that in your opinion a form of innovation? What is your vision and opinion regarding this program? What does this mean for your work and role in the hospital or rehabilitation center? How does the rehabilitation program fit in your eyes in the vision of UMCG / Beatrixoord?

2. How do innovation processes (with elements of technological and management innovation) in health care usually come about? Where and in what way do technological and management innovations reinforce each other? Where typically? How are these processes implemented and controlled? Who is involved?

I would like to speak with you about the innovation and implementation process of the cardiac rehabilitation program and about the care process as it is organized nowadays.

The innovation/ implementation process:

- a. Since when are you involved in the cardiac rehabilitation program 'rehabilitation before and after the operation'?
- b. If from the beginning: where did this initiative start or whose initiative was it? Where did the idea come from within the organization? Who was involved to get attention for it and put it on the agenda within the organization? Which support was essential?
- c. And how was the initiative elaborated within the organization? With whom and how was the idea explored?
- d. What was important to take the decision to actually implement the program? Who was involved in this decision?
- e. How has the program further developed towards preparation of the implementation?
- f. Who was involved? How did the collaboration between the different disciplines go?
- g. Did everyone immediately have the same idea about the program or do different interpretations exist of what the program is or should involve?

- h. How were the cardiac rehabilitation program (the therapy and treatments itself) developed? Did the insights of the chosen program come from the literature? Did they come from the therapists? Or the cardiologists / rehabilitation doctors? Otherwise? What were differences in understanding between the different types of professionals when the rehabilitation program was defined? Who had the decisive vote?
- i. What were important steps and milestones in setting up and implementing this program? Who were involved? Who did lead the program?
- j. How and when did cardiac rehabilitation actually start? Did everything immediately go right? What were points of attention / bottlenecks? How were they solved? Has the implementation process been evaluated? What was the outcome?

The integral care process (where are we now?):

- a. Can you describe how the process - now that it is implemented - is going? Where does it start? What are the steps? Where does it end?
- b. What do patients think of the program? What do you consider as a caregiver? What do your colleagues from other disciplines think of the program? And the management of the hospital? The health insurer?
- c. Are you working with the first line, second line, with people from Beatrixoord and UMCG? Could they immediately find each other in the care process? Or did people have to get used to this new way of multidisciplinary work? (think also of ranks and classes, other cultures)
- d. How is the entire program controlled and evaluated?
- e. What is going well? What can be done better? (eg information sharing, multidisciplinary consultation, evaluations and reflection, financing, ...) When is the project a success in your eyes?
- f. Are collaboration and experiences exchanged among similar BIBO or prehabilitation programs in other hospitals? What are their experiences with the cardiac rehabilitation program?

3. Does this kind of innovation lead to better health care outcomes at lower costs? What results are attributable to technological innovation and which to management innovation?

- a. What does the heart rehabilitation program deliver? For the patient? For you as a care provider / manager / driver / insurer? For society?
- b. How do you measure this success?
- c. Why does the cardiac rehabilitation program achieve these results (or not)? (eg cooperation between disciplines, tight protocols, ...)
- d. Do you link these results to possibly extra cost? (VBHC concept known?)
- e. Are these extra costs acceptable? Who pays for it?
- f. VERIFYING: HOW IS THE 'OFFICIAL OUTCOME' BY UMCG / BEATRIXOORD MEASURED / REPORTED INTERNALLY / TO INSURERS?

4. Which internal and external success and fail factors determine that an innovation (with elements of technological and management innovation) is successfully adopted?

- a. What do you think are the most relevant success and failure factors of this project?
 - i. With regard to your own organization? (eg behavior / skills, technologies, vision and management, culture, management)
 - ii. With regard to policy, financing, legislation and regulations? (eg funding from insurers, population-based and long-term care agreements)
 - iii. Regarding the innovation climate in NL: Are the Dutch and Groningen's care environments as well as the local and regional administrators open to this type of initiative? What drives them or hinders them?

5. Can the health care sector steer more effectively in the development, implementation and adoption of new technologies and methods that make health care systems more sustainable? If so, how?