Enhancing the Benefits Management Model for Complex eHealth Efforts

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Acknowledgments

No words can fully express the experience of a PhD race, because each story is unique. Humility, gratitude, and perseverance, plus the full range of human emotions best summarizes my journey. Events and meetings, both planned and unplanned, with a diversity of people, have guided my direction and helped me to take one step at a time. There is much to be thankful for—I am truly blessed!

Happiness is… writing the end.

Abstract

Healthcare services are facing substantial service provision challenges in the coming years because of e.g., substantial demographic changes leading to an imbalance between the number of patients who need help and the number of healthcare professionals needed to provide it. To meet these challenges, the healthcare sector depends on innovation to manage future service needs. A wide range of information and communication technologies (ICT) have been implemented into public healthcare services as interventions to support and empower people in their own homes. Additionally, future technology innovations are expected to further improve patients' quality of life and increase healthcare efficiency and effectiveness.

Although there is enthusiasm to employ ICT in healthcare services (eHealth), adoption often occurs without an evaluation of the health impact or a thorough understanding of the added value. Consequently, the impact of massive eHealth investments is poorly understood. In addition, implementing eHealth solutions is challenging and may further complicate personal, societal, and organizational arrangements. For instance, interorganizational collaboration in eHealth efforts is increasing which introduces additional complexity because initiatives involve stakeholders with dissimilar goals, task competence, culture, systems, and power that may challenge the initiative. Thus, questions remain regarding whether, or to what extent, health organizations can realize eHealth investment benefits.

A large proportion of ICT efforts do not deliver expected benefits on time or within budget, resulting in private sector profit loss and diminished public sector ability to accomplish societal and political goals. To address this, practical tools and methods have been developed and embedded in practice to guide organizations toward realizing the benefits and increasing the value of ICT investments.

A line of benefits realization (BR) and benefits management (BM) research has evolved since the 1990s to investigate how organizations can realize value from ICT. For instance, benefits management model (BMM) and research related to this (BM literature), is widely considered the most influential strand. BMM has been adopted in both public and private organizations in a number of countries. There is, however, limited empirical evidence of the BM process as it unfolds in practice.

Given these challenges, the overall research objective for this study was to explore and understand the BM phenomenon within the context of complex eHealth efforts, which are initiatives involving multiple stakeholder groups. This study investigated two research questions (RQ): 1) What benefits are realized in complex eHealth efforts? 2) Why is it challenging to realize benefits in complex eHealth efforts?

A qualitative research strategy was adopted because the study's main objective was to explore an area to which little prior attention has been paid. RQ1 was investigated by conducting a literature review that focused on eHealth initiatives from a primary care perspective, and the outcome contributed to shaping RQ2, which applied a multiple case study strategy to explore two complex eHealth efforts, one involving a single organization and one involving multiple organizations. Several theoretical perspectives such as Stakeholder theory, Organizational Learning theory, Dialectic Process Theory and BMM were used in the different papers to improve the understanding of BM in the context of complex eHealth efforts and to further develop BM models to meet current challenges.

The results were published in five peer-reviewed papers, each of which contributes to a holistic understanding of the overall research objective. Summarized, this study shows that both positive and negative effects from complex eHealth efforts have been reported over several years. Lack of mechanisms for learning and governance was identified as key challenges of BM in complex eHealth initiatives. Consequently, the existing BMM needs to be extended to accommodate these findings.

This thesis suggests five ways to improve BM in complex eHealth efforts. First, the concept of BR was defined to clarify the existing conflation of the BR and BM concepts. Second, an extended and enhanced BMM was developed that incorporated the BM context, levels of complexity for both organizational and interorganizational initiatives, and the critical aspects of learning and governance. Third, three propositions concerning learning and governance in BM were suggested based on the new model, which can be used to inform future BM studies and guide empirical work. Fourth, the propositions were further translated into a six-question checklist to stimulate learning from the BM process itself. Finally, I

provide suggestions for BM governance in interorganizational ICT efforts aiming to realize societal benefits.

Glossary

Benefit is an advantage on behalf of a particular stakeholder or group of stakeholders (Ward & Daniel, 2012, p. 325).

Benefits management is the process of organizing and managing such that the potential benefits arising from the use of IS/IT are actually realized (Ward, Taylor & Bond, 1996, p. 214).

Benefits realization is when organizational value is generated from the use of IS/IT through achieving changes initiated by stakeholders (Inspired by Ashurst, 2012; Ashurst, Doherty & Peppard, 2008; Jenner, 2011; Peppard & Ward, 2004; Remenyi, Bannister & Money, 2007; Ward et al., 1996).

Complex IT projects involve multiple groups of stakeholders (Gilchrist, Burton-Jones & Green, 2018, p. 846).

eHealth is the use of information and communication technologies (ICT) for health (World Health Organization, 2018).

Interorganizational level concerns stakeholders including related issues across collaborative organizations, e.g., collaboration initiatives between municipalities and hospitals. Details in Section 5.1.3.

Organizational level concerns stakeholders including related issues within an organization, e.g., municipality or hospital. Details in Section 5.1.2.

Societal level concerns societal stakeholders including related issues beyond interorganizational control, e.g., politics and government. Details in Section 5.1.1.

Stakeholder(s) is an individual or group of people who will receive the expected benefits or are either directly involved in making or are affected by the changes needed to realize the benefits (Ward & Daniel, 2012, p. 71).

Telecare is a way of giving care over distance by means of technology (Solli, Bjørk, Hvalvik & Hellesø, 2012, p. 2802).

Telemedicine is medical service provision across distance with use of technology (Fatehi & Wootton, 2012, p. 460).

List of abbreviations

BDN   Benefits Dependency Network

BM   Benefits Management

BMM Benefits Management Model

BR   Benefits Realization

ICT   Information and Communication Technology

TIP   Telemedicine Innovation Project

TMC Telemedical Center

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1 Introduction

In the coming years, healthcare services in both developed and developing countries will face substantial service provision challenges resulting from demographic changes. Among others, the proportion of people over age 60 is growing faster than any other age group. Globally, the number of people age 60 or older has doubled since 1980 and is expected to reach two billion by 2050 (World Health Organization, 2017). This phenomenon may reflect public health policy successes and socioeconomic development, but it poses a major challenge to healthcare systems capacity, since disease frequency and management complexity increase with age (Barnett et al., 2012). To prepare for the projected challenges, public healthcare services need to develop new and innovative solutions to keep older people independent by supporting citizens in their own homes and preventing hospitalization (European Commission, 2014; Seemann, Dinesen & Gustafsson, 2013).

To respond to the quest for health service innovations, a wide range of information and communication technologies (ICT) have been implemented (e.g., Henderson et al., 2014; Martin, Kelly, Kernohan, Bernadette McCreight & Nugent, 2008; Nøhr, Villumsen, Ahrenkiel & Hulbæk, 2015). The recent acceleration of ICT implementation efforts in healthcare services (eHealth) is expected to improve patients' quality of life and increase service effectiveness (Boonstra & Van Offenbeek, 2010). Although there is ambition to use ICT in healthcare services (Wootton, 2012), ICT is often adopted without a deep understanding of its added value or a comprehensive health impact evaluation (World Health Organization, 2005), both of which are critical because of the major investment and potential consequences at stake (Burton-Jones et al., 2019).

Martin et al. (2008) examined the effect of smart home technologies on people but found no studies that tested their effectiveness and concluded that smart technologies' effect on supporting people in their homes is unknown. Another study concluded that very little is known about telemedicine's cost-effectiveness for chronic disease management, reporting that the evidence is weak and contradictory (Wootton, 2012).

Implementing technology in the healthcare sector is an organizational challenge (Essén & Conrick, 2008). For instance, patient and healthcare professional roles are changing, which renders complex personal, societal, and organizational arrangements even more complex (Kaplan, Brennan, Dowling, Friedman & Peel, 2001). This can lead to conflicts among stakeholders within and across organizations (Pouloudi, 1999; Segar, Rogers, Salisbury & Thomas, 2013). Existing eHealth initiatives research is primarily from the healthcare professionals' perspective (Hoerbst & Schweitzer, 2015; Sävenstedt, Sandman & Zingmark, 2006) and pays scant attention to complex drivers, despite that the public sector has a complex body of stakeholders (Ward & Daniel, 2006). Such complexity requires appropriate coordination and communication to ensure that the technology supports the needs and values of key stakeholders (van Gemert-Pijnen et al., 2011).

In other public and private sector contexts, it has been challenging to implement ICT and achieve the intended outcome (Doherty, Ashurst & Peppard, 2012; Ghildyal, Chang & Joiner, 2018; Marnewick, 2017; Ward et al., 1996). Reported obstacles include competing stakeholder visions and various levels of trust (Gil-Garcia, 2012). A large proportion of ICT efforts do not deliver on cost or quality within the proposed timeframe (Flak, 2012), which results in lower profits for private organizations and failed societal and political goals for the public sector (Frisk, Bannister & Lindgren, 2015).

In a response to the recurring challenges of realizing benefits from ICT implementations (Doherty et al., 2012; Marnewick, 2017), a line of benefits realization (BR) and benefits management (BM) research has evolved. For instance, a process model for benefits management (BMM) was developed as a practical guide to support technology-enabled organizational change processes (Ward et al., 1996). This model and related BM research (BM literature) are thought to be the most influential among the different approaches within this research line (Mohan, Ahlemann & Braun, 2016; Waring, Casey & Robson, 2018).

Unfortunately, the terms BR and BM are used interchangeably in research (Breese, 2012; Flak, Solli-Sæther & Straub, 2015), where Ward and Daniel (2012)´s BM definition is most frequently used (Waring et al., 2018), regardless of whether BM or BR are being described (e.g., Coombs, 2015; Flak et al., 2015; Lin, Pervan &

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McDermid, 2007). BM is defined by Ward et al. (1996, p. 214) as *"the process of organizing and managing such that the potential benefits arising from the use of IS/IT are actually realized."*

Based on review of prior research, the actual meanings of BM and BR are not the same, although they are closely related. To the best of my knowledge, only one definition for BR of IS investments has been stated in the literature (Ashurst, 2012; Ashurst et al., 2008), which may contribute to explain the conceptual confusion in the field. Other researchers describe the specific phenomenon without defining it (e.g., Peppard & Ward, 2004; Remenyi et al., 2007; Ward et al., 1996). To clarify, this definition clearly distinguishes the two concepts: BR of IS investments is *when organizational value is generated from the use of IS/IT through achieving changes initiated by stakeholders* (Inspired by Ashurst, 2012; Ashurst et al., 2008; Jenner, 2011; Peppard & Ward, 2004; Remenyi et al., 2007; Ward et al., 1996).

BR is when changes initiated by people through use of IS/IT generate value for the organization. BM is the facilitation/management of the BR, including people, so that organizational value is generated. Since the BMM and related research is the most influential approach to BR and BM, this is the conceptual foundation for this thesis. In addition, BM is a necessary mechanism for generating organizational value. Thus, if BM processes are improved, BR is also likely to increase.

Since the 1990s, BM literature has evolved to describe how organizations can realize the value of ICT investments and provide normative guidance in the form of frameworks and methods (Flak et al., 2015). Based on experiences from many organizations, the BMM has been extended, refined, and presented in detail in two books by Ward and Daniel (2006, 2012): *Benefits management: Delivering value from IS & IT investments;* and *Benefits management: How to increase the business value of your IT projects.*

This literature has been embraced by practice communities in multiple societal contexts around the world (e.g., Badewi, 2016; Burton-Jones et al., 2019; Hellang, Flak & Päivärinta, 2013; Lin et al., 2007; Mohan et al., 2016; Villumsen, Nøhr & Faxvaag, 2018). Even though BM literature was developed years ago, it still serves as a good reference (Flak et al., 2015), and is suitable for both the public and private sector (Ward & Uhl, 2012). The BM literature has been used for research

published in IS journals for many years (Ashurst et al., 2008; Juell-Skielse, Lönn & Päivärinta, 2017; Ward et al., 1996), which acknowledges its relevance to the IS discipline (Flak et al., 2015) related to evaluation of IT/IS investments (Hirschheim & Klein, 2012; Ward et al., 1996).

However, opinions differ regarding whether (Peppard, Ward & Daniel, 2007) or not (Badewi, 2016) such practices influence the realization of benefits. In addition Marnewick (2017) questioned the sufficiency of such knowledge and standards since it is still challenging to deliver ICT initiative benefits. Furthermore, there is limited empirical evidence regarding how the benefits realization process unfolds in practice (Ashurst et al., 2008; Doherty, 2014; Frisk et al., 2015; Juell-Skielse et al., 2017; Lönn, Juell-Skielse & Päivärinta, 2016).

1.1 Research questions

A combination of the following issues motivated the overall study objective: challenges in future healthcare service provision, increased implementation of ICT in public healthcare services, limited knowledge of realized benefits from such efforts, adoption of BM practices for IS investments, and scarce empirical evidence of the BM process as it unfolds in practice. The overall research objective for this study was to explore and understand the phenomenon of BM in complex eHealth efforts that involve multiple stakeholder groups (Gilchrist et al., 2018). Two RQs evolved to address the overall research objective:

RQ1: What benefits are realized in complex eHealth efforts?
RQ2: Why is it challenging to realize benefits in complex eHealth efforts?

What benefits are realized in complex eHealth efforts?
Based on expected future challenges in the healthcare sector, there is a need to implement technology to facilitate innovative service provision. However, previous studies highlighted that the value of such initiatives is weak and contradictory. Consequently, it is important to better evaluate the experienced effects of eHealth initiatives.

RQ1 was developed to close this knowledge gap and provide direction for the RQ2 and involved a literature review. If the RQ1 findings had aligned with the overall expectations, RQ2 would probably have been framed differently.

Why is it challenging to realize benefits in complex eHealth efforts?

RQ2 was formulated based on the RQ1 findings. Although eHealth outcome expectations and experiences were aligned to some extent, some initiatives resulted in negative effects, which drew attention to the process of how organizations manage benefits.

BM practices are highly adopted by public and private organizations aiming to increase the value of their IS investments. BM implementation is reported to be challenging, but little is known about how BM unfolds in practice. To contribute to the overall research objective, RQ2 was defined to gain an in-depth understanding of actual challenges by reporting empirical evidence from two complex eHealth efforts in Norway.

1.2 Summary of contributions

This doctoral dissertation is based on findings from five studies published in four peer-reviewed conference proceedings and one peer-reviewed journal within the IS and eGovernment fields. Each study provides independent contributions to the BM phenomenon applied to complex eHealth efforts. Although the studies applied different perspectives to understand the phenomenon (Dennis, 2019) they stand as independent studies and also build on each other's findings. Therefore, each provides an important contribution to the overall research objective. Table 1-1 gives an overview of the five published papers, including how each map to RQ1 or RQ2.

Table 1-1: *Research publications including mapping to the two RQs*

#	Research publications	RQ1	RQ2
1	Askedal, K., Flak, L. S., & Abildsnes, E. (2017). *Reviewing effects of ICT in primary healthcare services: A public value perspective.* Proceedings of the 23rd Americas Conference on Information Systems, Boston, MA.	X	
2	Askedal, K., & Skiftenes Flak, L. (2017). *Stakeholder contradictions in early stages of eHealth efforts.* Proceedings of the 50th Hawaii International Conference on System Sciences, Big Island, HI.		X
3	Askedal, K., Flak, L. S., Solli-Sæther, H., & Straub, D. (2017). *Organizational learning to leverage benefits realization management; Evidence from a municipal eHealth effort.* Proceedings of the International Conference on Electronic Government, St. Petersburg, Russia.		X
4	Askedal, K. (2019). *Understanding the complexity of benefits management in an interorganizational eHealth effort.* Proceedings of the 52nd Hawaii International Conference on System Sciences, Maui, HI.		X
5	Askedal, K., Flak, L. S., & Aanestad, M. (2019). Five challenges for benefits management in complex digitalisation efforts- and a research agenda to address current shortcomings. *Electronic Journal of eGovernment.*		X

1.3 Dissertation structure

The remainder of the dissertation is structured as follows:

- **Chapter two** gives an overview of the study context, eHealth, and describes the BM literature that provides the study's conceptual foundation.
- **Chapter three** reviews prior eHealth research as it pertains to RQ1 and explains the research strategy (systematic literature review), data collection, data analysis, findings, and validity issues.
- **Chapter four** describes the research approach used to address RQ2, clarifying the philosophical foundation and describing the research strategies (interpretive case studies), research methods (interviews, observations, document- analysis), data analysis, and validity issues.
- **Chapter five** describes the two cases that have been investigated and provides an overview of the case context (Norwegian health system).

- **Chapter six** elaborates findings from the five published studies, first independently, then summarized in the context of the overall research objective.
- **Chapter seven** reviews content from Chapters two, three, five, and six to address RQ2. Further, theoretical and practical contributions are included in this chapter.
- **Chapter eight** concludes the dissertation, acknowledges its limitations, provides personal reflections, and suggests directions for future research.

2 Background literature and conceptual foundation

This chapter describes the eHealth literature to provide an overview of the study context and to clarify essential terms. It also introduces the benefits realization (BR) and benefits management (BM) research that provided the study's conceptual foundation.

2.1 eHealth landscape

ICT implementation and use in specialist and primary healthcare services in the public healthcare sector has increased dramatically over the last years (e.g., Eden, Burton-Jones, Scott, Staib & Sullivan, 2018; Martin et al., 2008). Diverse technologies and related initiatives are used to develop innovative interventions for future service provision and are a direct response to future challenges arising from changing demographics. For instance, as the population rapidly ages, the number of patients with chronic and comorbid diseases will increase and the per-person work effort will decrease; health systems must be aligned to meet these needs (Barnett et al., 2012; World Health Organization, 2017). In that respect, ICT provides a means to address this pressing issue in public healthcare services.

A variety of terms are used in healthcare technology research and practice, including eHealth, telemedicine, and telecare, which have varying definitions (Fatehi & Wootton, 2012; Oh, Rizo, Enkin & Jadad, 2005; Wootton, 2012) that are used interchangeably (Solli et al., 2012). This leads to conceptual confusion in the field (Martin et al., 2008), so it is important to review the relevant terms and definitions and how they interrelate.

The term eHealth is widely used, and defined by the World Health Organization (2018) as *the use of ICT for health*. The concept of eHealth emerged from medical informatics (Gu, Li, Wang, Yang & Yu, 2019), and the term was characterized as a "buzzword" back in 1999, but was barely in use before that time (Della Mea, 2001; Eysenbach, 2001), since the first article concerning eHealth was published in 1992. Today, North America and Europe have taken the lead in international eHealth research (Gu et al., 2019).

Several other eHealth definitions are richer in their descriptions (Oh et al., 2005), such as Eysenbach (2001, p. 2-3) definition:

eHealth is an emerging field in the intersection of medical informatics, public health and business, referring to health services and information delivered or enhanced through the Internet and related technologies. In a broader sense, the term characterizes not only a technical development, but also a state- of- mind, a way of thinking, an attitude, and a commitment for networked, global thinking, to improve health care locally, regionally, and worldwide by using information and communication technology.

The eHealth concept is broad, and its associated definition functions as an umbrella term applied to different technological solutions used in healthcare specific contexts (e.g., Boonstra & Van Offenbeek, 2010; Della Mea, 2001). Oh et al. (2005) pointed out that Eysenbach (2001)´s definition includes elements of health, technology, stakeholders, activities, attitudes, places, outcomes, and commerce. The definition of Eysenbach (2001) is adopted in this study to depict the multiple efforts applied to pair ICT and healthcare, including telemedicine and telecare.

Telemedicine is another term frequently used to depict ICT-related healthcare services. It was first used in the 1970s to describe medical service provided across a distance, but was rarely used before 1994, when telemedicine research rapidly increased (Fatehi & Wootton, 2012). Compared to eHealth, telemedicine is the most cited term and referred to in 126 counties (Fatehi & Wootton, 2012). As in eHealth research, North America and Europe lead in global telemedicine research, but Asian countries have been increasing their pace since 2010 (Gu et al., 2019).

Telemedicine is defined by the European Commission (2008, p. 3) as:

The provision of healthcare services, through use of ICT, in situations where the health professional and the patient (or two health professionals) are not in the same location. It involves secure transmission of medical data and information, through text, sound images or other forms needed for the prevention, diagnosis, treatment, and follow-up of patients.

Compared to eHealth, telemedicine is more focused and used for specific initiatives concerning medical treatment from a distance (Wootton, 2012).

Telemedicine technical solutions have been integrated in hospitals for several years (Preston, Brown & Hartley, 1992), but the technology is increasingly used in primary healthcare services as well (Vest et al., 2016). The above given definition of telemedicine is adopted in this study and considered one of the myriad technologies encompassed by the overall term, eHealth.

Telecare also falls under the eHealth umbrella. Telecare involves using technology to provide care remotely, and has been integrated into many healthcare services and health policies worldwide (Lynch, Glasby & Robinson, 2019). In 2012, Solli et al. (2012) analyzed the telecare concept and developed a new definition based on the multiple definitions used in research:

> *Telecare is the use of information, communication, and monitoring technologies which allow healthcare providers to remotely evaluate health status, give educational intervention, or deliver health and social care to patients in their homes* (Solli et al., 2012, p. 2812).

Although this definition is well-formulated, it limits the concept to patients' homes. Given today's proliferation of digital devices, the definition of telecare should not include geographical limitation; the authors themselves have acknowledged this (Solli et al., 2012). The Department of Health UK (2009, p. 5) provided a different definition, which is the one adopted for this study:

> *Telecare uses a combination of alarms, sensors, and other equipment to help people live independently. This is done by monitoring activity changes over time and will raise a call for help in emergency situations, such as a fall, a fire, or a flood.*

This definition places no limitations on the geographical context and highlights the benefit of independent living, which is an essential driver for telecare efforts (Lynch et al., 2019).

There are multiple application areas for eHealth, telemedicine, and telecare, in both specialist and primary healthcare services. As the volume of eHealth innovations continues to grow, related research on specific domains is emerging, such as smart home technologies for independent living and healthy aging (Martin et al., 2008;

Van Grootven & van Achterberg, 2019), m(obile)Health apps for patient education and behavior change communication (Njoroge, Zurovac, Ogara, Chuma & Kirigia, 2017), and e(lectronic)Consultations for rapid access to expertise and avoiding face-to-face visits (Liddy, Moroz, Afkham & Keely, 2018).

The healthcare sector has high expectations for eHealth solutions (Boonstra & Van Offenbeek, 2010), such as improved patient education, alleviating overload in specialist healthcare services, or improved service quality, which can be viewed in the numerous study protocols recently published (e.g., Moreira et al., 2017; Uddin et al., 2017). Additionally, effective patient follow-up for people with diverse medical issues in rural and urban areas is the main focus of several ongoing eHealth initiatives (e.g., Berwig et al., 2017; Gelano et al., 2018; Maru et al., 2018).

Eysenbach (2001), emphasized the common characteristics of eHealth, including efficient service, enhanced quality, and patient empowerment. However, eHealth initiatives are rarely evaluated (Njoroge et al., 2017) and tend to focus more on developing products rather than beneficial outcomes (Van Grootven & van Achterberg, 2019). A recent study revealed that eHealth interventions were often evaluated at the end but not throughout implementation, even though evaluation through the full process was thought to be important. These cases mostly evaluated human, social, and clinical aspects of eHealth initiatives, despite that several other factors, such as organizational, technological, economic, and ethical factors were described in conceptual papers (Enam, Torres-Bonilla & Eriksson, 2018). For instance, Burton-Jones et al. (2019) asserted that eHealth initiative evaluations were critical, given the major investment required and the potential consequences. Hofmann (2013) highlighted the emerging ethical issues associated with implementing eHealth solutions.

Even though there is great enthusiasm surrounding eHealth initiatives (Wootton, 2012), a comprehensive evaluation of the added value is lacking (Enam et al., 2018; Martin et al., 2008), and stakeholders such as policy makers, general practitioners (GPs), and informal caregivers remain skeptical (Egerton, Nelligan, Setchell, Atkins & Bennell, 2017; Jaschinski & Ben Allouch, 2019; Kuhn, Kleij, Liersch, Steinhäuser & Amelung, 2017).

In summary, the motivation for investigating the overall study objective was based on the combination of issues elaborated above: demographic changes requiring healthcare providers to innovate their services, increased implementation of eHealth solutions, limited knowledge regarding whether, or to what extent, health organizations can realize effects from eHealth investments.

2.2 Conceptual foundation

Previous BR and BM research served as a lens for investigating the overall research objective. This Section provides a brief overview of how the research stream evolved within the IS field; an overview of terms and definitions to distinguish the two concepts and clarify the current conflation; and a more thorough review of the work originated from Ward et al. (1996), benefits management model (BMM) and related research (BM literature). Since BMM is the most influential approach within BR and BM research (Mohan et al., 2016; Waring et al., 2018), BM literature was used as conceptual foundation for this thesis.

2.2.1 Benefits realization and benefits management literature

In reviewing IS history, Hirschheim and Klein (2012) described a growing concern that began as early as 1961 regarding the actual added value of IS implementations, which the authors related to IS investment evaluation. This issue has persisted as IS investments continue to fail. Consequently, IS value and IS investment evaluation has become a major research topic within the IS research discipline (Avgerou, 2000; Frisk et al., 2015; Schryen, 2013), which has resulted in an extensive base of IS literature that includes numerous ex ante (based on forecast) and ex post (based on actual results) evaluation frameworks (Frisk et al., 2015). Noted by Kohli and Grover (2008), most IT value research has been ex post, stemming from post hoc analysis of ICT initiatives. The outcome of ex post evaluation further functions as an ex ante description of how to achieve IT value (Farbey, Targett & Land, 1994). Regardless of whether ex post or ex ante or a combination of the two perspectives are applied to studying the phenomenon Kohli and Grover (2008, p. 25) asserted that the main goal of all IT value research *"is to help managers use the practical findings to improve upon the value they derive from IT."* Therefore, they claim that all studies drawing upon these thoughts are qualified contributions to the phenomenon.

New ideas have been added to the topic of IS investment evaluation over the years, among others literature concerning BR and BM (Hirschheim & Klein, 2012). The available IT evaluation literature is extensive (Frisk et al., 2015), and thus too diverse to serve as a basis in this thesis. Therefore, BR and BM research was used as a lens for investigating the overall research objective.

This literature is largely a response to recurring challenges related to ICT implementation and realizing benefits from the efforts (Doherty et al., 2012; Ghildyal et al., 2018; Marnewick, 2017). However, in research, the terms BR and BM are conflated and treated as the same concept (Breese, 2012; Flak et al., 2015), where Ward et al. (1996, p. 214)'s BM definition is most frequently used (Waring et al., 2018) for both BR and BM (e.g., Coombs, 2015; Flak et al., 2015; Lin et al., 2007). A literature review of BR an BM approaches identifies myriad combinations of terms and definitions. Table 2-1 summarizes the concepts, which clearly reflect this conceptual confusion.

Table 2-1: *Reviewing BR and BM concepts*

Definitions used of Benefits Realization (BR)	
Ashurst (2012, p. 10); Ashurst et al. (2008, p. 354)	*Benefits realization from IT investments can therefore be conceptualized as an organizational capability that has the express purpose of ensuring that investments made in IT consistently generate value, through the enactment of a number of distinct, yet complementary, competences.*
Flak et al. (2015, p. 2488)	*Our understanding of benefits realization is that IT investments are likely to benefit from a structured process of organizational change with explicit emphasis on hands-on managerial involvement…We use the term benefits realization, but our understanding is consistent with Ward and Daniel's definition: "the process of organizing and managing such that the potential benefits arising from the use of IS/IT are actually realized.*
Ghildyal et al. (2018, p. 61)	*One must see the importance to understand that investment in information systems is not bound to bring about gain by itself, just like it's not bound to add essential monetary worth. Worth depends on the organisation's ability to convert and use the IT resource. Researchers call this 'benefits realisation.'*
Lin et al. (2007, p. 165)	*The essence of benefits realization is to organize and manage so that the potential benefits arising from the use of IS/IT can actually be realized.*
Lönn et al. (2016, p. 3031)	*Benefits realization means "the process of organizing and managing such that the potential benefits arising from the use of IS/IT are actually realized."*
Torres, Khemici and Paré (2017, p. 74)	*Benefit realization is also defined as "the process of organizing and managing such that potential benefits arising from the use of IT are actually realized."*
Ward et al. (1996, p. 215 and 222)	*The important thing in business is not to make good forecasts but to make them come true. This is the essence of benefits realisation… The realization of business benefits usually requires changes to business processes or practices in order to achieve maximum effect.*
Waring et al. (2018, p. 618)	*There are many definitions of BR within this literature but the definition that is most frequently used is "[…] the process of organising and managing such that the potential benefits arising from the use of IS/IT are actually realised.*

Table 2-1 continued

Definitions used of Benefits Management (BM)	
Association for project management (n.d.)	*Benefits management is the identification, definition, planning, tracking and realisation of business benefits.*
Coombs (2015, p. 365)	*Benefits management has been defined as 'the process of organizing and managing, such that the potential benefits arising from the use of IT are actually realized.'*
Ashurst (2012, p. 93)	*Benefits Management sets out a 'process of organizing and managing such that the potential benefits of IT are realized.'*
Ward et al. (1996, p. 214)	*The overall process of evaluation and realisation of IS/IT benefits has been termed benefits management and may be defined as: 'The process of organizing and managing such that potential benefits arising from the use of IT are actually realised'.*
Definitions used conflating BR and BM	
Aitken, Coombs and Doherty (2015, p. 3)	*Benefits Realisation Management (BRM) is the promotion of 'a different mind-set, based on an approach that manages value on an active basis'*
Bradley (2016, p. xiv)	*Benefit Realisation Management (BRM, previously named Benefits Management) is the process of organising and managing, so that potential benefits, arising from investment in change, are actually achieved.*
Ashurst et al. (2008, s. 353)	*Benefits realization programme can be defined as 'the process of organizing and managing, such that the potential benefits arising from the use of IT are actually realized.'*
Doherty (2014, p. 182)	*Benefits realisation management (BRM) has been defined as 'the process of organising and managing, such that the potential benefits arising from the use of IT are actually realised'*
Love, Matthews, Simpson, Hill and Olatunji (2014, p. 2)	*Benefits realization management (BRM) is a process that is enacted to ensure that the expected benefits of capital investments, such as Building Information Modelling (BIM), are realized.*

Table 2-1 continued

Definitions used conflating BR and BM
Torres et al. (2017, p. 73-74)	*"Benefit realization" or "benefit management", also known as "value management", is an approach that is used to identify prioritize and optimize business benefits arising from IS/ IT projects that cannot be done effectively through business operations.*

To the best of my knowledge, BR of IS investments has only been conceptualized in prior research by Ashurst (2012); Ashurst et al. (2008), although the phenomenon has been broadly explored by other researchers, such as Jenner (2011); Peppard and Ward (2004); Remenyi et al. (2007):

- *Technology by itself has no inherent value; this value must be unlocked, a task that can only be achieved by people. While it might seem somewhat superficial to state, technology must be actually used effectively for benefits to be delivered! This use takes place within business and management processes* (Peppard & Ward, 2004, p. 184).

- *ICT investment has no right value in its own right. ICT investment has a potential for derived value. It is now widely agreed that ICT benefits are not directly a technology issue as such but are to do with how businesses use the technology. Therefore, ICT investments need to be measured and managed by P&L [profit and loss] people focusing on business processes and practice…In fact, for the value of ICT to be generated or realized it is necessary that the business process or practice to which it contributes actually improves the effectiveness, economic and/or efficiency of the enterprise* (Remenyi et al., 2007, p. 30, 32).

- *Benefits are expected when a change is conceived. Benefits are realised as a result of activities undertaken to effect the change…Benefits are usually dependent on change and this requires active management. In other words, projects can be completed to schedule and budget, but the benefits are usually only realised when some change in working practices occurs.* Jenner (2011, p. 7, 10).

It can be tempting to cite a well-defined concept, such as BM as defined by Ward et al. (1996), regardless of the BR or BM perspective, since "everyone" else seems to be doing the same. However, this contributes to the current conceptual confusion in the field. To make it even more confusing, the two terms have been combined into Benefits Realization Management, BRM (See Table 2-1). The reason for introducing yet another term is not clear, but perhaps it was meant to cover both concepts with one term, so that nothing is left out. However, BRM is still conceptualized by the definition of BM.

Based on a review of prior research, the actual BR and BM meanings are related but are not the same and should not be used synonymously. A clear definition of BR is valuable for distinguishing the two concepts.

Inspired by selected research (Ashurst, 2012; Ashurst et al., 2008; Jenner, 2011; Peppard & Ward, 2004; Remenyi et al., 2007; Ward et al., 1996) a definition for BR is developed. BR of IS investments *is when organizational value is generated from the use of IS/IT through achieving changes initiated by stakeholders.* As mentioned earlier, the most commonly used definition for BM and also BR was developed by Ward et al. (1996, p. 214) as "*the process of organizing and managing such that the potential benefits arising from the use of IS/IT are actually realized.*" In other words, BR is the generation of organizational value (dependent on changes and stakeholders), and BM is the driving mechanism for managing change activities, including the stakeholders required to achieve BR (Ward & Daniel, 2012).

Given the BM and BR conflation, it is difficult to separately relate prior research to each of the two concepts. Several practical methods and approaches have been developed during the last decades that have the same basic framework and stages: identification, planning, implementation, evaluation and review, future benefits (Aitken et al., 2015). Recently, Waring et al. (2018) provided an excellent overview of twelve BR and BM frameworks or classification schemes within the IS discipline. Five of the frameworks, including Active Benefits Realization (Remenyi & Sherwood-Smith, 1998), Great IT Benefits Hunt (Farbey et al., 1994) and Benefits Management (Ward et al., 1996) were presented as independent and original contributions. Six of the remaining frameworks, including benefits dependency network (BDN) (Ward & Daniel, 2006) and the Benefits Realization

Capability Model (Ashurst et al., 2008) build on the BM approach by Ward et al. (1996).

Although there has been substantial research on BR and BM, there is disagreement as to whether these practices improve our ability to realize benefits from IT investments (Badewi, 2016; Peppard et al., 2007). Marnewick (2017) questioned the knowledge sufficiency and standards, given the challenges of delivering the required benefits from ICT initiatives. Despite this, BR and BM approaches have been adopted in practice, where BMM and BM literature have been the most influential (Mohan et al., 2016; Waring et al., 2018). Although the BM literature was developed years ago, it is still a good reference (Flak et al., 2015), and suitable for both the public and private sectors (Ward & Uhl, 2012).

The BM literature have been applied to research published in IS journals for many years (Ashurst et al., 2008; Juell-Skielse et al., 2017; Ward et al., 1996), which reflects its relevance (Flak et al., 2015) to the evaluation of IT/IS investments (Hirschheim & Klein, 2012; Ward et al., 1996). Hence, the BM literature provided the conceptual foundation for this thesis and this study findings further contribute to the BM literature.

2.2.2   The benefits management model

In the mid-1990s, a BM research program was developed at the UK Cranfield School of Management Information Systems Research Centre (Ward et al., 1996). The aim of which was to address the limitations of existing IS/IT investment evaluation approaches that were identified in a survey of over 100 organizations (Ward & Daniel, 2006). The results showed that many organizations were not satisfied with the current methods because they over-relied on financial business cases or failed to include social aspects in IS initiatives. Further, the study revealed that few had an effective process for managing IS/IT benefit delivery (Ward & Daniel, 2006; Ward et al., 1996).

A BM process model, BMM, was developed during the project's three-year run (Ward et al, 1996), see Figure 2-1. The BMM has been extended and refined based on experiences from several organizations, and presented in detail in the two books by Ward and Daniel (2006, 2012) *Benefits Management. Delivering Value from IS & IT Investments* and *Benefits Management: How to Increase the Business Value*

of Your IT Projects. Since the BM literature approaches IT/IS investment evaluation from a lifecycle viewpoint (Ward et al., 1996), the BMM is an iterative process. The model comprises five stages and includes different tools and techniques emphasizing change management, organizational development, and innovation (Ward & Peppard, 2002).

The approach is heavily based on Total Quality Management (TQM), which is *"one of the most widespread management approaches for improving products and/or services and processes for achieving higher customer satisfaction and higher competitiveness of organizations"* (Kessler, 2013, p. 878). The approach focuses on among others: customer requirements, work processes, stakeholder involvement, learning, and continuous improvement (Bank, 1992; Hackman & Wageman, 1995).
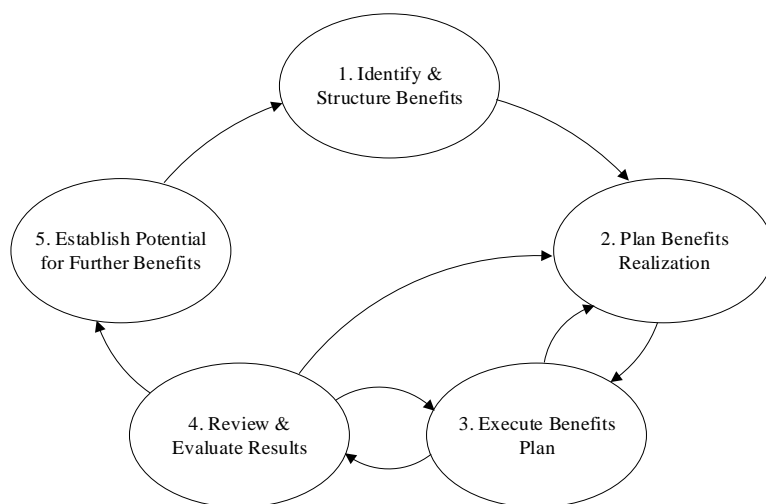
Figure 2-1: Benefits management model (Adopted from Ward & Daniel, 2006, p. 105)

The overall approach for evaluation and BR is called BM, since there is an inherent interdependency of BR and change management. As stated earlier, BM is defined by Ward et al. (1996, p. 214) as *"The process of organizing and managing such that the potential benefits arising from the use of IS/IT are actually realized."* Therefore, BM is not only about implementing technology, but addresses the organizational processes and changes necessary to achieve the intended outcomes of technology initiatives. Although the BMM is applicable to a wide range of initiatives with different benefit aims (e.g., innovation and change, process restructuring, effectiveness and efficiency), Ward and Peppard (2002) argued that the process will increase its value when the issues associated with achieving the

benefits are more complex. Although the BMM has been shown to be useful (Peppard et al., 2007), some processes need to be completed before entering the BMM, such as identifying the BM context.

BM context

It is important to understand the strategic context before an organization develops, invests in, or implements a particular technological solution (Ward & Daniel, 2006). Technology and strategies can differ, which affects the change management and risk strategies. Ward and Peppard (2002) presented an overview of the BM context, which is in Figure 2-2. Three inputs to the BM process, benefit drivers, benefit types, and organizational context, indicate the scope of the tasks involved and reflect the resources and efforts needed.
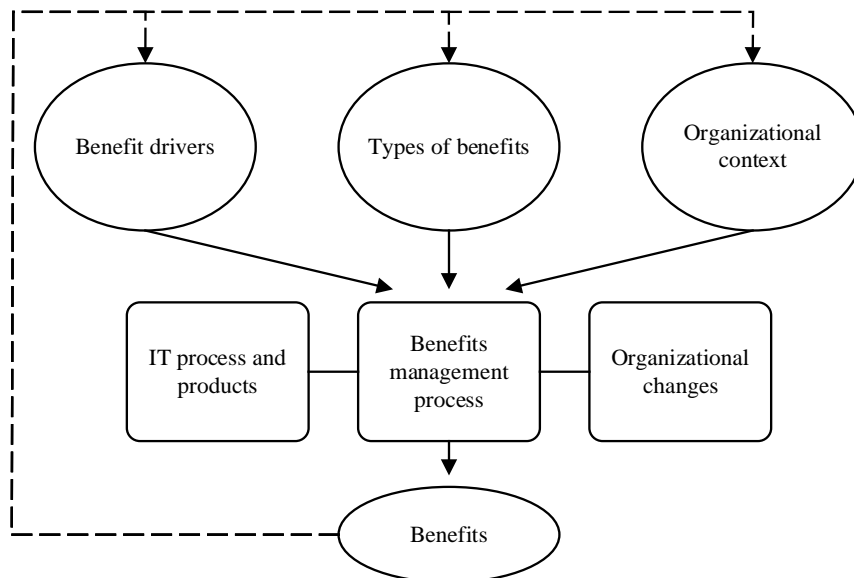
Figure 2-2: Benefits management context (Adopted from Ward & Peppard, 2002, p. 441)

To help identify the process scope for including stakeholders and defining objectives, guidance and tools related to drivers, benefits, and organizational context can be used, such as the framework for an application portfolio (Ward & Peppard, 2002). Overall, to identify benefit drivers, reflecting on why the investments are being made will indicate why an organizational change is needed and how successful change management is critical for the future. Reflections regarding benefits can generate the general understanding, such as "reduce cost" or "improved quality" that is necessary before detailed potential benefits analysis and required changes are undertaken. Regarding organizational context, reflections can be made about how strategic initiatives, other activities, or

21

organizational issues may affect the specific initiative by inhibiting or facilitating its progress and desired outcome (Ward & Peppard, 2002).

The BM context analysis (Figure 2-2) in a specific initiative provides an overall understanding of scope and expected outcomes. However, if it is important to understand the BM context before entering the BMM; it is unclear why this BM pre-stage is not an integrated part of the BMM. An illustration of the BM context (Figure 2-2), is only available in a publication from almost 20 years ago (Ward & Peppard, 2002), although it is highlighted in more recent publications. Since the BMM is the most influential of the BR and BM approaches (Waring et al., 2018), neglecting to specify the BM context as a part of the BMM leaves out an important pre-understanding of the initiative.

BMM stages (Figure 2-1), including associated activities, provide tools for managing benefit delivery and the organizational change activities needed to deliver the benefits. The stages are framed from the perspective of the business management role and its responsibilities (Ward & Peppard, 2002) and include: 1) identify and structure benefits; 2) plan benefits realization; 3) execute benefits plan; 4) review and evaluate results; and 5) establish potential for further benefits. Table 2-2 defines the key BM concepts.

Table 2-2: *BM key concepts (Based on Ward & Daniel, 2012)*

BM key concepts	Definition
Business drivers	*Issues which executive and senior managers agree mean the organization needs to make changes, and the timescales for those changes. Drivers can be both external and internal but are specific to the context in which the organization operates* (p. 70).
Investment objectives	*A set of statements that describe what the organization is seeking to achieve from the investment. They should be a description of what the situation would be on successful completion of the investment* (p. 70).
Business benefit	*An advantage on behalf of a particular stakeholder or group of stakeholders. This implies that the benefits are owned by the individuals or groups who want to obtain value from the investment* (p. 70).
Benefit owner	*An individual who will take responsibility for ensuring that a particular benefit is achieved. This usually involves ensuring that the relevant business and enabling changes progress according to plan and are achieved. Due to the need to ensure that things get done, the benefit owner is usually a senior member or staff* (p. 71).
Stakeholder(s)	*An individual or group of people wo will receive the expected benefits or are either directly involved in making or are affected by the changes needed to realize the benefits* (p. 71).
Business changes	*The new ways of working that are required to ensure that the desired benefits are realized. These will be the new ongoing ways of working in the organization, at least until the next change initiative* (p. 72).
Enabling changes	*Changes that are prerequisites for achieving the business changes or that are essential to bring the system into effective operation within the organization. Enabling changes are usually 'one-off' activities rather than ongoing ways of working* (p. 73).
Enabling IS/IT	*The information systems and technology required to support the realization of identified benefits and to enable the necessary changes to be undertaken* (p. 98).
Change owner	*An individual or group who will ensure that an identified business or enabling change is achieved successfully* (p. 107).

Stage one: Identify and structure benefits

Stage one serves at least four purposes. The first is to establish a set of investment objectives that connects to the drivers for organizational change. Second, potential benefits including stakeholders and potential implications should be identified based on the objectives. A stakeholder analysis is recommended to identify potential negative impacts for stakeholder groups or issues that may create organizational challenges that can lead to project failure. Third, specify where benefit will be realized to address responsibility for benefit delivery. Fourth, based on identified benefits, including benefit owners, it is necessary to determine what changes are needed to achieve the intended outcome and address the responsibility carrying out the necessary changes (Ward & Daniel, 2006).

The total outcome of the BMM's stage one activities (identify and structure benefits) can be used to justify continuing or determining the initiative (Ward & Daniel, 2006).

Stage two: Plan benefits realization

Stage two has two main purposes: to develop a detailed benefits plan and a business case for the initiative. These require developing a detailed description of benefits and changes, which includes responsible, defining the expected benefit measurements and current status baseline, and developing a benefits dependency network (BDN) for visualizing relationships between benefits and changes (Ward & Daniel, 2006).

Before finalizing these deliveries, a thorough stakeholder analysis should be conducted to gain an understanding about organizational and human factors that may be affected by the initiative. A stakeholder analysis is part of a risk analysis, as multiple stakeholders may affect the project in different ways. Some stakeholders will experience the benefits, other stakeholders will be affected by changes, and some stakeholders will experience both. The aim of a stakeholder analysis is trying to see the initiative from the users' perspective. The different stakeholder groups should have ownership of the planned changes to help increase their project motivation, and ensure that all stakeholder groups are moving in the same direction (Ward & Daniel, 2006).

After the detailed benefits plan is developed, a business plan can be developed as a basis for requesting financial support (Ward & Daniel, 2006).

Stage three: Execute benefits plan

In stage three, the benefits plan is executed and adjusted if needed. In addition to the project timeline, several issues can arise that may affect the ability to realize the intended benefits. Issues both within and outside the project may occur, such as changes in project resources or organizational changes, which may require plan adjustments or action, such as rescoping the initiative, which may lead to modifications in business changes or enabling changes. Such reviews can be undertaken regularly to ensure that the activities are aligned with the investment objectives and may stimulate discussions on whether the project should continue. In addition to adjusting the expected benefits, new benefits may become visible and deemed qualified to be incorporated into the benefits plan (Ward & Daniel, 2006).

Stage four: Review and evaluate results

In stage four, the initiative itself is evaluated (e.g., determining whether benefits have been realized and identifying any unexpected negative effects) and organizational learning is applied to identify how the BM process can be improved for other projects in the organization. Ward and Daniel (2006) asserted the importance of post-evaluation as a factor that differentiates organizational success in IS implementations. The evaluation's objective is to drive future improvement rather than place blame for failures; this requires focusing on the final outcome rather than what happened during the process. If the post-evaluation is experienced as negative, the process may not be honest and open to constructive feedback, which could lead to unusable results and a lack of input for future projects (Ward & Daniel, 2006).

Stage five: Establish potential for further benefits

Stage five is a creative process that involves all stakeholders and others who have gained knowledge about the initiative, where the purpose is to identify new opportunities, including the scope of changes and potentially enabling IS/IT. This purpose is based on previous research indicating that it is difficult to identify all benefits in advance of an initiative (Ward et al., 1996), and that new possibilities may be missed if this stage is skipped. The outcome of this stage could be used as

a foundation for new initiatives entering the first stage of the BMM (Ward & Daniel, 2006).

Establishing a solid foundation for BM

Even though the BMM is an iterative process where numerous activities are an important part of the whole, the brief descriptions of the five stages reveal that the knowledge and content retrieved from the two first BMM stages function as a base for the rest of the process (Ward & Daniel, 2006). Stage three executes the outcome from stage one and two, by using them as a guide for managing the project including required changes. Stage four and five also use the outcome from the first two stages as a baseline for evaluating the project, addressing any discrepancies, and identifying new opportunities (Ward & Daniel, 2006). Therefore, the BMM's first two stages are essential because they facilitate the rest of the process.

Related to the two first stages of the BMM, three questions can stimulate organizations to establish a solid foundation for realizing benefits from their digitalization efforts: 1) Why is the investment being made? 2) What types of benefit is the organization expecting to achieve? 3) How can a combination of business changes and IT deliver those benefits. The BM key concepts (Table 2-2) are relevant in that respect and are outlined in italic in the following text.

To answer the first question (why is the investment being made?), a driver analysis is helpful for identifying and understanding the reasons for change, also called the *business drivers*. The business drivers are strategic to the perspective of meeting the future, and often external owing to the organizational context, which means that the business drivers exist, even if organizations do not act on them. However, internal business drivers also exist. When the business drivers are identified, it is important to agree on *investment objectives*, which must address the business drivers and be expressed in a way that encourages stakeholders to commit themselves to them. When both business drivers and investment objectives are identified and agreed upon, the objectives should be linked to the drivers. If an objective does not link to a driver it should be removed because it hinders developing a valid business case (Ward & Daniel, 2012).

To answer the second question (what types of benefit is the organization expecting to achieve?), Ward and Daniel (2012) proposed identifying the *business benefits*

specific to individuals or groups by examining the investment objectives and identifying improvements that will be gained if the objectives are achieved.

Answering the last question (how can a combination of business changes and IT deliver those benefits?) involves developing a benefits dependency network (BDN), which relates the two previous question outcomes (business drivers, investment objectives, business benefits) to the *business changes* and *enabling changes* required to realize benefits. Based on the identified changes, the *enabling IS/IT* may lead to additional changes. When considering enabling IS/IT to the very last stage, organizational strategy rather than technology availability, becomes the focus of the investment.

Mapping the different BDN elements leads to an increased understanding of dependencies between the changes and benefits and demonstrates that the benefits will only be realized if changes that are linked to them are achieved. If identified changes (business changes or enabling changes) are difficult or impossible to achieve the dependent benefits should be removed from the BDN because they pose an investment risk (Ward & Daniel, 2012).

Using BDN as a base, additional information on benefits and changes is needed to test project appropriateness and BR. For instance, *benefit owners* and *change owners* should be assigned to each of the benefits, business changes, and enabling changes (Ward & Daniel, 2012). Both change owners and benefit owners should have an individual name assigned; otherwise it may be unclear who owns problems related to changes or benefits. However, the roles should be owned by operation because individual project members can seldom enable required changes or realize benefits. Further, the roles should be assigned to individuals interested and committed to the initiative who see the roles as appropriate for themselves.

After the benefits owners and change owners are identified, it is important to understand the relationship and balance between them. If change owner names differ from benefit owner names, it can potentially challenge the BM process in later stages. If change owners gain no or few benefits, they may not be prepared to invest sufficient effort to make the changes required for realize the linked benefits. If this is identified in an early stage, it can be addressed either by rescoping or restructuring the project or ensuring that change owners support and understand

the business drivers and investment objective, and agree to make the required changes (Ward & Daniel, 2012).

BM research

Although the BMM approach is available for organizations to improve the value of their investments, several IS/IT initiatives fail to meet their goals (Doherty, 2014). Limited empirical evidence exists regarding how BM processes occur in practice (Ashurst et al., 2008; Doherty et al., 2012). Doherty (2014, p. 186) emphasized a pressing need for studies that *"explicitly seek to critique the approaches through which this unacceptable level of waste might best be tackled."* Farbey et al. (1994) point out that applying a framework for BM can, in addition to stimulating and organizing benefits and costs, become an opportunity for learning because the framework itself can be studied along with the BM process and lead to further improvements. Knowledge is the key to delivering value through IS/IT because it underpins BM practices, which in turn are relevant for BM competences and capability (Ashurst et al., 2008).

Some studies have investigated the outcome of such practices; Doherty et al. (2012) provided insights on how to succeed with BR in IT-enabled initiatives based on three cases (e.g., from project management to transformation management or from well-balanced project teams to coherent governance structures). Coombs (2015) studied inhibitors and facilitators for BR in ICT efforts, which resulted in outcomes divided into technically oriented factors (e.g., training as an example of technical facilitators) and organizationally oriented factors (e.g., lack of involvement and user engagement as an example of organizational inhibitors). He encouraged practitioners to use BDN as a tool for identifying important relationships between BM key concepts.

Additionally, digitalization has caused rapid societal change that challenges the traditional perspective of organizations (Majchrzak, Markus & Wareham, 2016). In addition, interorganizational collaboration across both public and private sectors is substantially increasing (Boonstra & de Vries, 2008; Garmann-Johnsen & Eikebrokk, 2014; Gil-Garcia, 2012; van Fenema & Keers, 2018). Such collaborations are not straight forward, and obstacles include competing stakeholder visions, interprofessional relations, trust, political issues, and technical standards (Christensen, 2017; Gil-Garcia, 2012). The BMM approach, including

activities and methods, is criticized for failing to offer guidance on how interorganizational digitalization efforts can be managed to realize benefits beyond single organizations or at the societal level (Flak et al., 2015).

Still, the BM literature acknowledged that organizations become more complex in terms of activities and working teams. To support collaboration in such complexity, it is suggested to specify benefits to the individual, teams, and the organization. Further, the project perspective is expanded into programs (“*a dynamic collection of related projects and activities that, in combination, achieve agreed organizational objectives and emergent outcomes, including the creation of new capabilities*”); and portfolios (“*a set of related and unrelated projects and programs that compete for an organization's resources and funds*”) (Ward & Daniel, 2012, p. 274). For instance, Ward and Daniel (2012, p. 282) provided a three-level structure for program management, where a program sponsor is specified at the highest level, followed by a program manager at the middle level, and project managers at the lowest level. A program steering group supports the program manager in addition to the program office where the benefits are maintained across multiple projects.

Managing a portfolio is an integral part of governance because decisions made at this level may affect both organizational performance and future strategy achievement. This requires effective and robust governance processes that are consistently sustained over time. For instance, adequate information about alternative use of resources and funds is important for comparisons and decision making. This can be accomplished by combining BM with a portfolio management approach to ensure such consistency is achieved across multiple projects and programs (Ward & Daniel, 2012).

The program and portfolio management in BM literature addresses the complexity of a single organization. However, it does not include the evolving interorganizational initiatives and the associated increased complexity. To extend the approach to include interorganizational efforts, several scholars have called for studies exploring BM in more complex settings (Flak et al., 2015; Lönn et al., 2016).

3 Reviewing effects of eHealth efforts

This chapter summarizes prior research reporting on effects from eHealth initiatives. First, a systematic literature review was conducted in 2017. Method, results, and validity issues of this review are specified. Next, an updated literature search was conducted in 2019 to cover research published after 2016. The outcome of recent studies is also presented in this chapter. Finally, a summary is provided in order to address RQ1 and to further guide the research process of this thesis.

3.1 Literature review

As a first approach to the study's overall research objective, a literature review was conducted using Webster and Watson (2002) concept-centric method for organizing the literature. The review aimed to identify existing knowledge of the realized benefits from complex eHealth efforts (RQ1), fill gaps in the existing knowledge, and use the new knowledge to guide future research activities. Since a literature review enables theoretical progress and helps establish a foundation in an emerging field (Webster & Watson, 2002), this research strategy was appropriate for the purpose.

The review focused on prior eHealth initiatives research in a primary healthcare setting. The motivation for investigating this context was two-fold: first, demographic changes will increase the need for primary health services provided in patients' homes, and technology may provide innovative solutions for keeping older people independent, supporting individuals in their own homes and preventing hospitalization (European Commission, 2014; Seemann et al., 2013); second, there are no comprehensive reviews of primary care eHealth initiative effects, and this literature review contributes gap-filling knowledge.

The term *effects* specify eHealth initiative outcomes, which could also be termed *benefits*. Positive and negative effects is also referred to as benefits and disbenefits in the BM literature (Ward & Daniel, 2006). However, practice often use the term effects rather than benefits when talking about value of IS investment(Frisk et al., 2015). The terms effects and benefits are used interchangeably in this dissertation.

The outcome of the literature review was published and comprises one of the five papers addressed in this doctoral dissertation (Appendix C, Paper 1).

3.1.1　Data collection

Two major library databases, Scopus and Ebsco Medline, which cover a wide range of IS and eHealth journals, were used for the literature search. A combination of the search phrases provided in Table 3-1 was used. No filters where applied for publication year or outlet. However, the Scopus search was limited to "title-keywords- abstract," and the Ebsco Medline search was limited to "Boolean."

Table 3-1: *Search phrases defining the literature review*

Concepts	Search phrases
Technology	telemedicine OR ambient assisted living OR telecare
Impact	effects OR evaluation
Context	primary healthcare OR community health services

The search produced 419 papers. After two review process iterations, 137 papers published in 80 different outlets were identified as relevant. The manual and interpretive review process inclusion criteria were explicit technology focus, clearly stated effects, and primary health context. The exclusion criteria were: an exclusive hospital context, non-English or non-Scandinavian language, non-health focus, no mention of effects, unrelated to technology, no full text version available, or diverse (e.g., articles that for other reasons were difficult to map).

The number of included papers was decreased by one from the 138 originally reported in Askedal, Flak and Abildsnes (2017a) to 137, because a duplicate was identified that had listed the author name in a different format. The results presented below have been revised accordingly and marked with an * where revised. However, because of the high number of analyzed papers, removing the duplicate did not affect the study's main outcome. Figure 3-1 summarizes the literature review's data collection procedure.

```
┌─────────────────┐
│ Ebsco Medline: 210 │
│   Scopus: 209    │      ┌──────────────────────┐
│                 │      │  Duplicate: 136 papers* │
│ Total: 419 papers │-----▶│                        │
└─────────────────┘      │ * One additional duplicate │
         │               │  was found during thesis │
         │               │ development and the results │
         ▼               │  have been updated      │
┌─────────────────┐      │   accordingly.          │
│                 │      └──────────────────────┘
│ After removing   │
│  duplicates:     │
│                 │      ┌──────────────────────┐
│ 283 unique papers │-----▶│ Removed when reviewing  │
└─────────────────┘      │ title + abstract: 119 papers │
         │               └──────────────────────┘
         ▼
┌─────────────────┐
│ After reviewing title │
│  + abstract:     │
│                 │      ┌──────────────────────┐
│ 164  papers     │-----▶│ Removed when reviewing  │
└─────────────────┘      │  full-text: 27 papers   │
         │               └──────────────────────┘
         ▼
┌─────────────────┐
│ 137  papers     │
│ included in the  │
│ literature review │
└─────────────────┘
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Figure 3-1: Data collection procedure

3.1.2 Data analysis

The data analysis was done in two iterations (Figure 3-1). First, the title and abstract were scanned guided by two concepts from different streams of the existing literature, technology, and effects. The concepts formed the base for the concept matrix illustrated in Table 3-2, as suggested by Webster and Watson (2002). The initial analysis provided a rich overview of the research papers that reflected the two concepts.

Table 3-2: *Concept matrix for literature review*

Concepts	Reference	Dimensions
Technology	Several studies (Martin et al., 2008; Solli et al., 2012)	• Telecare • Telehealth • Telemedicine • Other
Effects	Rival value positions for eGovernment (Rose, Persson & Heeager, 2015)	• Administrative efficiency • Service improvement • Citizen engagement • Other

The second analysis iteration reviewed the full text of the remaining papers according to the concept matrix (Table 3-2), using the same inclusion/exclusion criteria. Through this analysis round, the concept matrix was further developed by adding units (e.g., documented effects) and impacts (e.g., positive or negative effects) to every concept effects dimension (e.g., administrative efficiency). In addition, the initial mapping was revised, and additional items were identified to refine the concept matrix. MS Excel spreadsheets were used to manage the analysis. I analyzed most of the papers in the two iterations, but some of the challenging issues were discussed with co-authors to better calibrate the analysis (Askedal et al., 2017a).

3.1.3 Results

The public values analysis results are presented in Tables 3-3 and 3-4 (revision marked with *). Every dimension can potentially be found in every paper. Table 3-3 summarizes the number of papers containing the different public values dimensions. Table 3-4 summarizes the results through the evolving public values concept matrix. The different units can have several combinations because of the impacts included in the analysis; the numbers presented in the table represent the number of papers containing different combinations of public values dimensions.

Table 3-3: *Research papers containing dimensions of public values*

Dimensions of public values	Number of papers
Administrative efficiency	79
Service improvement	120*
Citizen engagement	9
Other	6

* Denotes a revised result after removing a duplicate article that was included in the original study.

Table 3-4: *Concept matrix of public values*

Impact	Public values											
	Administrative efficiency			Service improvement			Citizen engagement			Other		
	Documented	Reported, not documented	Expected	Documented	Reported, not documented	Expected	Documented	Reported, not documented	Expected	Documented	Reported, not documented	Expected
Positive	49	9	17	91*	12	29	5	1	1	2	2	1
Negative	8	0	0	6	1	0	3	0	0	1	0	0
No difference with/without technology	4	0	0	10	0	0	0	0	0	0	0	0
Inconclusive	2	0	0	5	0	0	0	0	0	2	0	0

* Denotes a revised result after removing a duplicate article that was included in the original study.

A comprehensive overview of reference examples with every combination listed in Table 3-4, is shown in Appendix C, Paper 1. The analysis revealed that a substantial number of studies reported effects from primary care eHealth efforts, which included both positive and negative (Table 3-4).

Reported positive effects were identified through the lens of public values (administrative efficiency, service improvement and citizen engagement), with are consistent with the stated characteristics of eHealth (Eysenbach, 2001), such as efficient services, enhanced quality, and patient empowerment. Examples of positive effects that have been documented from eHealth initiatives in primary care include: improved work processes and improved access to expert assistance (Barton, Morris, Rothlind & Yaffe, 2011), improved access to service, increased user satisfaction and improved health conditions (Bassilios et al., 2014), and patient empowerment and participation (Fairbrother et al., 2013).

The literature review also revealed negative effects from primary care eHealth initiatives. Although analyzed from a public values perspective, negative effects can also be linked to eHealth characteristics defined by Eysenbach (2001), such as increased workload and perceived negative changes in professional roles (MacNeill et al., 2014), technical and usability issues (Verwey et al., 2014), security risks related to confidentiality, and negative impact on engagement related to technology reservation (Chang et al., 2013).

3.1.4 Validity issues

While it was manageable to map effects reported in the papers to Rose et al. (2015)'s public value framework, it was challenging to do so. Differentiating administrative efficiency and service improvements was relatively straightforward. However, the distinction between service improvement and citizen engagement was challenging. For instance, increased participation and patient empowerment effects were categorized as citizen engagement, which can be a variation of healthcare service improvement. Similarly, access to healthcare service effects were categorized as service improvement, although these could also be considered citizen engagement.

Further, the data analysis did not include an in-depth investigation of study sample size and quality. Variations in both areas are expected, and a more careful data collection procedure with additional inclusion criteria could have affected the results. While this is acknowledged as a potential weakness, the results remain valid and interesting, especially given the sample size and the exploratory nature of the work.

Since one person analyzed and interpreted the studies, the outcome may have been influenced by personal biases. It would be challenging to describe the logic behind the insight and rationale in every step of the review, given the iterative and interpretive processes that may affect the reproducibility of the results. However, reproducibility is not always necessary or sensible for every type of literature review (Leidner, 2018). Furthermore, this literature review was published in peer-reviewed conference proceedings, which provides evidence of quality, validity, and acceptable levels of potential bias.

3.2 Updated literature search

An updated literature search was conducted in October 2019 to cover research published after 2016. The same library databases, search phrase combinations (Table 3-1), filters and inclusion/exclusion criteria were used. In addition, a publication date filter was added to exclude papers published before 2017. The search resulted in 69 new papers (Ebsco Medline: 44 and Scopus: 25). No duplicates were found. Twenty-nine papers were removed from the sample after reviewing the titles and abstracts, and two papers were removed after reviewing the full text. The updated search resulted in 38 new studies published from January 2017 through October 2019 that reported expected and experienced effects of primary healthcare eHealth initiatives.

Since the motivation for Paper 1 was increased knowledge of eHealth effects (RQ1) and guide the next step of the research process, the studies revealed in the updated search were not analyzed according to public values framework. However, I summarized reported eHealth effects that were relevant to RQ1.

Some of the more recent studies reported results that were consistent with the positive effects identified in the initial concept-centric literature review, such as efficient and timesaving services and decreasing expensive and unnecessary face-to-face visits (e.g., Archibald et al., 2018; Dham et al., 2018; Liddy et al., 2018); improving patient care, and health conditions (e.g., Liddy et al., 2018; McGowan, Lynch & Hensen, 2019); and increased empowerment and engagement (e.g., McGowan et al., 2019; Walsh, Kaselionyte, Taylor & Priebe, 2018).

Other recent research reported no difference with specific eHealth interventions or negative effects from primary care eHealth initiatives, which were also consistent

with results reported from the initial review. For instance, initiatives that caused daily routine interference or were time consuming for patients (Bedson et al., 2019; Boyce, Nyangara & Kamunyori, 2019); dissatisfaction with technology and poor patient engagement (Dham et al., 2018); and no improvement in health conditions or health service (Tucker et al., 2017; Zakus et al., 2019).

Also similar to the earlier findings, some recent studies reported outcome variance, such as McGowan et al. (2019), where most of the outcome measurements (e.g., general health and empowerment) were positive, but others (e.g., pain and health literacy) showed no effect of the eHealth intervention. Dham et al. (2018) also reported varied results, where telepsychiatry via videoconference was timesaving and educational, but was ineffective for patient engagement and provided unsatisfactory technology. However, some studies highlighted the need for further research to validate the findings because of their small-scale trial (e.g., Bedson et al., 2019; Nyberg, Tistad & Wadell, 2019).

A recent meta-review of telephone based triage and advice services for expanding out of hours medical care (Lake et al., 2017), reported that there is no simple answer regarding the benefits and overall effectiveness of such interventions. Thus, much is contingent on the context of the different systems or circumstances. Lennon et al. (2017) studied barriers and facilitators in implementing large-scale eHealth initiatives through process evaluation of a national program in the UK. Three levels affecting readiness were identified (macro, meso, micro), resulting in a list of 10 recommendations to address these issues (e.g., commitment and investments in local and national infrastructure are required if technology-based health care services are to become standard). Additionally, the recommendations also suggested that it was necessary to provide the right environment for upscaling eHealth initiatives.

3.3 Summary

In summary, the literature review findings suggest that the level of known and documented effects are substantially greater than what has been suggested in the literature. The results indicate that primary healthcare eHealth initiatives have several effects, both positive and negative, which have been reported over several years.

This study was limited to primary healthcare services. However, a recent study that reviewed effects from eHealth initiatives in hospitals should be mentioned (Eden et al., 2018). The study reveals that both positive and negative effects are also experienced in a hospital context, which is consistent with the effects noted for primary care initiatives. The researchers called for future studies to investigate why positive and negative effects occur. Further, they suggested two potential areas for minimizing negative effects: improved governance structures and optimized technology use.

Whether the outcomes of eHealth initiatives are positive or negative appears to be contingent upon the context or circumstances (Lake et al., 2017). Hence it is important to understand these contexts and contingencies.

4 Research approach

This chapter describes the multiple elements that drove the research approach guiding four of the five research publications that provided a base for answering RQ2, including the philosophical grounding based on ontological belief and epistemological assumptions, which influenced the research design, strategies, and methods. Figure 4-1 illustrates how the two RQs were approached in different ways. Figure 4-2 summarizes the application of the research strategies.

4.1 Philosophical grounding

In IS tradition, several research approaches were applied to build IS theory and can be associated with e.g., authors philosophical assumptions and the nature of the emerging phenomenon (Mueller & Urbach, 2017). Researchers should be clear about philosophical grounding in their dissemination of research (Walsham, 1995b). I explain my philosophical stance in terms of ontology and epistemology because it best serves the researcher if these concepts are the initial focus (Hassan, Mingers & Stahl, 2018). The concepts are important for understanding the researcher's perspective of the world, how phenomena can be studied and thus implicate research outcomes. A summary of this doctoral study's philosophical grounding is shown in Table 4-1.

4.1.1 The concepts of ontology and epistemology

Ontology derives from Greece and refers to "*the theory of being as being*" (Delanty & Strydom, 2003, p. 6) and relates to the knowledge of social reality (Delanty & Strydom, 2003). Alternative stances of reality within IS research include realism and constructivism (Bryman, 2012; Goldkuhl, 2012; Gonzalez & Dahanayake, 2007; Hassan et al., 2018). Realists takes the view "*that certain types of entities— be they objects, forces, social structures or ideas—exist in the world, largely independent of human beings*" (Mingers, 2004, p. 374). Constructivists "*assert that social phenomena and their meanings are continually being accomplished by social actors*" (Bryman, 2012, p. 710).

Ontological beliefs affect what one seeks to observe; researchers usually do not question their ontological stance, but rather accept their thoughts of reality or even may not be aware of their thought on reality (Lee, 2004). Within IS research, studies of ontology have attracted little attention (Wand & Weber, 2017).

Epistemology also derives from Greece and refers to "*the theory of knowledge*" (Delanty & Strydom, 2003, p. 4). More specifically, epistemology concerns how knowledge is acquired through different aspects, such as possibility, limitation, origin, and validity (Delanty & Strydom, 2003). The three most common traditions used to distinguish epistemological foundations in social science are positivism, interpretivism, and critical research (Delanty & Strydom, 2003). In the 1990s, the most applied epistemological assumption within IS studies was positivism, followed by interpretive studies, with critical studies absent from IS research (Orlikowski & Baroudi, 1991). This finding was recently confirmed by Hassan et al. (2018), who asserted that positivism was and is the philosophical center that has guided IS research, where critical realism is a novel approach within the field and together with interpretive research has made little progress. Because positivism and interpretivism are still seen as the two most common traditions for dividing epistemology within IS research, these two will be briefly explained and used for stating epistemological assumptions in this study.

Positivism emphasizes the role of science as the only method conducive to truth (Johnsen, 2014), and posits that researcher and reality are separate (Weber, 2004). In addition, the social world can be described by law-like generalizations, and knowledge can be obtained from a collection of value-free facts (Nandhakumar & Jones, 1997). Positivism has its roots in the natural sciences (Orlikowski & Baroudi, 1991) and grounds the research in a realist ontology (Mueller & Urbach, 2017). To increase the predictive understanding of a phenomenon, positivistic studies typically apply structured instrumentation, such as statistics (Weber, 2004).

Interpretivism argues that there is a need to combine understanding and explanation in the orientation toward reality, and to understand reality as a social construction (e.g., language, shared meanings) by human actors (Klein & Myers, 1999; Walsham, 1995a). Both human actors and researchers are interpreting the situation when studying a research phenomenon (Nandhakumar & Jones, 1997; Orlikowski & Baroudi, 1991; Weber, 2004), to achieve an in-depth understanding (Chen & Hirschheim, 2004). In that respect, field studies are the most appropriate research strategy for generating valid interpretive knowledge (Orlikowski & Baroudi, 1991). However, the intention of interpretive studies is not to generalize outcome to a population, but rather to gain a deeper structure of a phenomenon for

the purpose of analytic generalizability (Orlikowski & Baroudi, 1991; Walsham, 1995b).

Phenomenology and hermeneutics are the philosophical bases for interpretivism (Myers, 2004). Phenomenology is a science of phenomena, as they emerge and are immediately understood by our senses. Phenomenology concerns human natural experiences, the life we live in (Johannessen, Tufte & Kristoffersen, 2007) and describe the subjective world (Garsjø, 1997). Hermeneutics seeks a holistic understanding of humans' world and believes that a phenomenon can only be understood in the context where it occurs. Hence, context provides keys for understanding the phenomenon (Johannessen et al., 2007). Based on hermeneutics and phenomenology, Klein and Myers (1999) proposed a set of seven principles for evaluating interpretive IS field research. These principles can be applied to assess the accuracy of results and confirm credibility.

4.1.2 Research design rationale

Ontology was the first concept applied to define an appropriate research approach for the intended phenomenon, followed by epistemology. As described in Section 2.2, BM is an iterative process that begins with an idea of an IS/IT initiative and continues until the desired benefits are realized (Ward & Daniel, 2006). In general, BM is related to organizational development, change management, and human interaction. Stakeholder involvement is emphasized throughout the BM process (Peppard et al., 2007), where a common understanding of how to effectively apply new ways of working and assigning responsibility for identified changes is essential. Understanding the strategic context is also deemed important (Ward & Daniel, 2006). In this study, the strategic context was public healthcare services in Norway.

Since BM in complex eHealth efforts is related to humans (e.g., stakeholders), it would be challenging to adopt an ontological stance where reality exists independently of our construction of it. Constructivism was the ontological grounding in this doctoral study because humans construct the reality in which they participate. The phenomenon is entered by gaining multiple views of it and making appropriate connections (Charmaz, 2006). Based on the ontology, the process of knowledge creation in this specific study must be reflected upon. I found it difficult to believe that it was possible to contribute to the phenomenon without

involving stakeholders and the specific BM context. Thus, interpretivism was applied as an epistemological assumption, since an in-depth understanding of the study object through lived experience was necessary to contribute to the BM phenomenon as applied to complex eHealth efforts. Further, phenomenology and hermeneutics were philosophical bases, given the nature of the overall study objective. For instance, the Norwegian health context was of key importance for understanding the phenomenon (described in Section 5.1), and the BM phenomenon in complex eHealth efforts is an emerging societal issue (described in Section 2.1 and Chapter 3). Klein and Myers (1999) seven principles were also used for validation. Table 4-9 summarizes the principles, including examples from this study.

Table 4-1 summarizes the philosophical grounding for this thesis.

Table 4-1: *Overview of philosophical grounding*

Ontology	Constructivism
Epistemology	Interpretivism
Philosophical base	Phenomenology and hermeneutics

Research approach

Research question 1:
What benefits are realized in complex eHealth efforts?

Identify documented effects from complex eHealth efforts

Outcome:
In-depth knowledge about effects in complex eHealth efforts

Research question 2:
Why is it challenging to realize benefits in complex eHealth efforts?

CASE 1
Single organization- multiple units

Explore multiple stakeholder perspectives

Experience benefits managment in practice

CASE 2
Multiple organizations- multiple units

Understand complexity concepts

Understand how complex concepts affect benefits management

Outcome:
In-depth knowledge (theoretical and practical) about why benefits management in complex eHealth efforts is challenging

Figure 4-1: Overview of research approach

4.2 Interpretive case studies

Since the essence of RQ2 is to explore an area where little is known, Strauss and Corbin (1998) suggested a qualitative research design. There are multiple research strategies that fit a qualitative research design and IS theorizing, including grounded theory (Charmaz, 2006; Strauss & Corbin, 1998) and case studies (Gerring, 2004; Yin, 2013) that provide distinct procedures for guidance (Creswell, 2009; Eisenhardt, 1989; Mueller & Urbach, 2017).

Creswell (2009, p. 13) defined a case study as "*a strategy of inquiry in which the researcher explores in-depth a program, event, activity, process, or one or more individuals.*" Case studies are a valuable research strategy and have been applied in many IS studies (Klein & Myers, 1999; Mueller & Urbach, 2017; Orlikowski & Baroudi, 1991). Yin (2013) argue this research strategy is best suited for answering "why" and "how" questions, where the focus is a contemporary phenomenon within a real-life context. By applying a case study strategy in IS research, technology can been studied in a natural setting, which further improves the knowledge about the emerging phenomenon and contributes to theory through practice (Mueller & Urbach, 2017).

Therefore, a case study research design with an interpretive approach (Walsham, 1995b) was chosen to answer RQ2. This approach is well established within the IS field (Walsham, 2006) and enabled an in-depth understanding of the emerging phenomenon of BM in complex eHealth initiatives. Hence, it provided novel contributions to both the BM literature and practice.

Given the nature of the research process (see Chapters 5 and 6), empirical data were collected in the early stages of two Norwegian eHealth efforts. The cases were not randomly selected but were chosen because they reflected discoveries during data collection, which is desirable in interpretive studies (Walsham, 1995b). Therefore, the strategy became a multiple case study (Yin, 2013). The cases are not similar in level of complexity; however, the study context (Norway, public healthcare services, eHealth) and research objective (RQ2) were the same. The aim was not to replicate findings, but to generate an understanding of the emerging phenomenon (Eisenhardt, 1989). Specific details about the two cases, including a brief overview of the Norwegian health system, are presented in Chapter 5.

4.2.1 Data collection

Case studies can include a combination of data sources to gain in-depth knowledge about the phenomenon (Mueller & Urbach, 2017), including archives, interviews, or observations (Eisenhardt, 1989). Several sources provided data for this study. Case 1 included two observational studies (one as complete observer and one as complete participant(Creswell, 2009)) and 15 focus group interviews. Case 2 included 50 semi-structured interviews, participant observation (observer as participant, (Creswell, 2009)), and document analysis.

Case 1

Data for Case 1 was collected from February 2016 to November 2016. At that time, I was employed by the organization (municipality) represented in the case, where I was responsible for developing recommendations for optimal organization of the telecare service. This work was conducted from February to September 2016 and included the first observation study (complete observer, (Creswell, 2009)) and the focus groups interviews. After this assignment was completed, I was given the task of developing a benefits realization plan for the given municipality. Data were collected through participant observations (complete participant, (Creswell, 2009)) from September 2016 to November 2016.

Observational study 1 (complete observer)

The first observational study aim was to identify stakeholders and identify current workflows in homecare services and similar services relevant to the given task. Field notes were taken during the observations and transformed into workflow charts afterward, when a list of key stakeholders was developed. Table 4-2 presents the different sites and time spent. All observations were conducted in February 2016.

Table 4-2: *Observational study 1 details (complete observer)*

Sites	Approximately hours spent
Out-of-hours emergency primary care	2
Telemedical Center	2
Home care service (day)	7
Home care service (night)	9

<u>Focus group interviews</u>

Focus group interviews were conducted to identify current service and future needs for managing telecare solutions. The knowledge gained through the observational studies, combined with my background as a nurse, served to limit the time needed for general explanations regarding healthcare services during the interviews. A semi-structured interview guide was used to highlight themes relevant to the study objective (e.g., explanations and experiences with current service provision, thoughts about future healthcare services in general and related to the specific eHealth initiative). The complete interview guide is shown in Appendix A.

Fifteen focus groups comprising 64 respondents were conducted from February to April 2016. Details regarding the respondents are shown in Table 4-3. Informants were selected from different levels of the healthcare service in the specific municipality, based on the stakeholder analysis. Given my role as an "insider" and because most respondents were working in shifts, the informants were recruited through their managers. Some key stakeholders were also discovered during the interviews and thus included in the study. Respondents were enthusiastic and confident during the interviews and expressed gratitude for being included.

The study was approved by the Norwegian Centre for Research Data (NSD). All informants received an information letter explaining the aim of the study and provided written informed consent to participate. The interviews lasted from 41 to 77 minutes and were recorded. Union representatives from two different professional associations participated in five of the interviews and safety representatives participated in two. These roles were not specified in Table 4-3 because the individuals also held roles as nurses or other healthcare professionals. However, one union representative participated in two interviews, which is why there were 64 unique respondents even though the Table 4-3 shows 65 number of respondents. After fifteen focus groups, little new information arose.

Table 4-3: *Overview of respondents in Case 1*

#	Organizational unit	Role	No. of respondents	Duration of interview
1	Home care services (night)	• Nurse/other healthcare professional	4	63 minutes
2	Home care services (central area)	• Nurse/other healthcare professional	5	60 minutes
3	Home care services (rural area)	• Nurse/other healthcare professional	5	57 minutes
4	Health and care services (area 1)	• Service manager	7	66 minutes
5	Health and care services (area 2)	• Service manager	3	77 minutes
6	Telemedical Center	• Nurse/other healthcare professional • Service manager • Advisor	10	58 minutes
7	Out-of-hours emergency primary care	• Nurse/other healthcare professional	2	59 minutes
8	Home care services (rural area)	• Nurse/other healthcare professional	2	50 minutes
9	Home care services (central area)	• Nurse/other healthcare professional	2	50 minutes

Table 4-3: *Overview of respondents in Case 1*

Table 4-3 continued

#	Organizational unit	Role	No. of respondents	Duration of interview
10	Senior Citizen Council	• User representative	10	41 minutes
11	Health and care services (area 3)	• Service manager	5	45 minutes
12	Service allocation	• Technical personnel/ICT	1	75 minutes
13	Health and social service	• Top manager	2	58 minutes
14	Home care services	• Technical personnel/ICT • Advisor	3	49 minutes
15	Health and social service	• Service manager • Advisor	4	50 minutes

Observational study 2 (complete participant)

The combination of being appointed to develop a benefits realization plan and the limited available knowledge of how the benefits realization process occurs in practice (e.g., Doherty, 2014) was an excellent opportunity to pursue in-depth knowledge about the phenomenon. An observational study with me as a "complete participant" (Creswell, 2009) provided the data and I reviewed different methodologies for guiding the benefits realization process. The KommIT methodology (The Norwegian Association of Local and Regional Authorities, 2013) was the most transparent and useful for this purpose; the methodology was further inspired by the work of Ward and Daniel (2006).

From September to November 2016 several activities were conducted following the KommIT methodology. Field notes were compiled of experiences related to the specific activities and the overall process was specified from a benefits realization manager perspective. Stakeholders involved in the process were not aware of the data collection, thus the top manager gave permission to use the data sources for research purposes. The field notes did not contain any sensitive

information and was used for the specific purpose of reporting individual learning from the BM process as it occurred in practice.

Since the given task was to develop a benefits realization plan in addition to the notion about the importance of the two first stages in the BMM, data were only collected from activities related to stage one and two in the KommIT methodology. Table 4-4 lists the activities from which the individual experiences were reported.

Table 4-4: *Observational study 2 details (complete participant)*

Stage 1 Concept: identify and consider benefits			
Activity	**Purpose**	**Involved**	**No. of meetings with operation/project**
Process analysis	Identify current and future work processes	I developed the process analysis based on earlier activities in the BR process (observational study, focus groups). Seven project members were involved in refinement.	2 meetings with the project group
Change analysis	Analyze changes in work processes and define benefits	Representing healthcare services: 4 department managers, 14 Service managers, 5 advisors. Representing the project: 4 project members including project manager.	5 meetings in different departments
Stakeholder analysis	Identify stakeholders, analyze their impact/ attitudes, and define a strategy	I updated the existing stakeholder analysis, based on inputs from earlier activities in the BR process and research outcome (observational study, focus groups).	0 meetings, continuous updates
Benefits analysis	Consider benefits against costs	Representing healthcare services: 1 department manager, 3 service managers, 8 advisors. Representing the project: 4 project members including project manager.	3 meetings

Table 4-4 continued

Stage 2 Plan: plan benefits realization			
Activity	**Purpose**	**Involved**	**No. of meetings with operation/project**
Benefits realization plan	Define actions, deadlines, how to convert the realized benefits, measurement indicators, responsible for benefits realization	Representing healthcare services: 3 advisors. Representing the project: 2 members including project manager.	0 meetings for developing the plan Continuous checkouts and discussions with advisors 1 meeting with the steering committee where the benefits realization plan was presented

Case 2

All data from Case 2 were collected between February 2017 and December 2018 through semi-structured interviews, document analysis, and participant observation (observer as participant, (Creswell, 2009)). From January 2017, I was working as a PhD- student at the University of Agder and was connected to the Telemedicine Innovation Project (TIP, Case 2) for specific research purposes in one of the work packages. Thus, my role as a researcher in Case 2 was known to key stakeholders in the initiative from the very beginning, and my role "observer as participant" (Creswell, 2009) in this specific case.

<u>Semi-structured interviews</u>

Informant selection was completed in two steps: first, and based on the knowledge gained from Case 1, a list of key stakeholders was sent to the TIP organizations' top /project managers, who refined the list based on their knowledge. Second, the inputs were used in a stakeholder analysis completed in two iterations (societal and individual/group level) using the stakeholder typology from Mitchell, Agle and Wood (1997), and focusing on the stake: factors influencing the achievement of goals in the specific case. Additional informants were included as a result of the analysis.

Fifty semi-structure interviews were conducted with TIP stakeholders, either through face-to-face meetings or via telephone/Skype, between September 2017

and February 2018. Since I was engaged in the TIP, the informants were not recruited directly, but through a mediator to avoid emotional pressure to accept the request. A semi-structured interview guide highlighted relevant themes for the study objective (e.g., current and future healthcare services including practice, technology, and telemedicine; and core TIP aspects, including drivers, potential benefits, and experiences). The interview guide is shown in Appendix B.

The study was approved by the Norwegian Centre for Research Data (NSD). All informants received an information letter explaining the aim of the study and provided written informed consent to participate. The interviews lasted from 24 to 89 minutes and were recorded and transcribed in NVivo. Table 4-5 shows the respondent and interview characteristics. When the interviews were conducted, only two of the municipalities were actively participating in the project. Thus, the respondents only represent two of the three municipalities initially involved in the TIP.

Stakeholder	Sector	Role (N)	No. of int.	Duration of interview
Municipality 1	Public	• Top/service/department manager (8) • Project manager/work package leader (2) • Advisor (5) • Public health officer/GP (3) • Nurse/other healthcare professional (2) • Technical personnel/ICT (2) • Senior citizen council (1)	23	24-71 min
Municipality 2	Public	• Top/service/department manager (3) • Project manager/work package leader (1) • Advisor (1) • Nurse/other healthcare professional (2) • Technical personnel/ICT (1)	8	38-71 min
Hospital	Public	• Top/service/department manager (3) • Advisor (1) • Doctor (3) • Nurse/other healthcare professional (2) • Technical personnel/ICT (1) • Other (1)	12	32-89 min
University	Public	• Top/service/department manager (1) • Project manager/work package leader (1) • Professor/researcher (1)	3	46-59 min
Technology vendor	Private	• Top/service/department manager (2)	2	54-58 min
Consulting company	Private	• Project manager/work package leader (1)	1	63 min
Other		• User representative (1)	1	45 min

Observational study 3 (observer as participant)

From February 2017 to December 2018 I attended several TIP meetings because I was directly engaged in one of the project work-packages (related to research); I took notes during most of these meetings, but not for systematic analysis purposes. However, the many hours spent with TIP stakeholders gave me deeper insight and knowledge about the initiative, stakeholders, processes and interorganizational collaboration. This may in turn have affected the data interpretation and outcome. Table 4-6 lists meetings attended during the given timeframe.

Table 4-6: *Observational study 3 details (observer as participant)*

Forum	Topics	No. of meetings	Timeframe	Sum length
Work package	Status, BM, Socio economic analysis, BR report 1 & 2	24	February 2017-December 2018	41 hours
Project meeting (all work packages)	Status, preparation to Steering Committee	12	February 2017-December 2018	38.5 hours
Project seminar (all work packages)	Status	3	September 2017-October 2018	24 hours
Steering committee	PhD focus, BR report 1 & 2	4	December 2017-December 2018	4 hours
Meetings with project members from other work packages	Criteria for patient enrollment, service design, test of technical solution	4	June 2017-May 2018	8.5 hours
Training for TMC nurses	General TMC training, heart failure	2	August 2017-March 2018	9 hours
Other	Criteria for patient enrollment	1	November 2017	2 hours

Document analysis

In addition to semi-structured interviews and participant observations, multiple TIP documents stored on SharePoint and available to TIP partners were used to create a coherent story line and an overview of key TIP events (provided in Section 5.2.2, Figure 5-3). The documents (including revised versions) listed in Table 4-7 were developed from the very beginning of the TIP until December 2018 and were used as data source for this overview.

Table 4-7: *TIP documents used in document analysis*

Documents
TIP application to Research Council Norway
TIP proposal
TIP charter
Work package descriptions
Consortium agreement (TIP partners)
Collaboration agreement (for municipalities in the region)
Data processing agreement (for technology vendor and municipality 1)
TIP Steering Committee invitations/minutes

4.2.2 Data analysis

Analyzing data in a qualitative research design involves making sense of image data and text (Creswell, 2009). Analyzing data from case studies was described by Eisenhardt (1989, p. 539) as *"the heart of building theory… but it is the most difficult and the least codified part of the process."* Based on the type of data collected, different tools and techniques can be used for this purpose (Strauss & Corbin, 1998). Interpretive case analysis using different techniques was used in four of the papers addressed in this dissertation (Papers 2-5). Although a large amount of data was collected in the two cases (elaborated in Section 4.2.1) the main sources for data analysis in Case 1 were the focus group interviews and the Observational Study 2 (complete participant, (Creswell, 2009)). In Case 2, interviews and document analysis were main sources for data analysis. Field notes and minutes collected in Observational Study 1 (complete observer, (Creswell, 2009)) and Observational Study 3 (observer as participant, (Creswell, 2009)) were

not systematically analyzed but were important data sources for increasing knowledge of the two cases.

Case 1

A data analysis framework for qualitative research proposed by Creswell (2009, p. 185) was used to guide the data analysis process reported in Papers 2 and 3. Although the framework suggested a linear and hierarchical approach, the elements were not strictly followed in the order presented in the figure, but rather used as guiding elements in an iterative and dynamic process.

Focus group interviews

The focus group interviews were not transcribed before analyzing them, so the audio files were the source for the initial analysis. Right after the interviews were conducted, the audio files were carefully reviewed several times and coded into themes from the given stakeholder's perspective (Creswell, 2009). The interview guide was used as a base for defining themes related to the specific telecare service initiative. Table 4-8 presents the themes used for the initial data analysis. A summary of the analysis was sent to all informants and they were given the opportunity to revise within a given deadline.

Table 4-8: *Themes used for analyzing the focus group interviews*

Themes	Impact
Thoughts about current service provision	Advantages, disadvantages
Thoughts about future needs	
Thoughts about the telecare service (Response Center)	Advantages, disadvantages
Suggestions for optimal organization of the service	

Next, the thematic analysis was used as a basis for identifying stakeholder contradictions. Most of the focus groups were homogenous in the represented roles and organizational units (Table 4-3). Contradictory interest was identified through several discussions with the co-author of Paper 2. The dialectic process lens provided by Van de Ven and Poole (1995) was used as a analytic tool, and the results are presented in Askedal and Flak (2017), shown in Appendix C.

<u>Observational Study 2 (complete participant)</u>

Based on experiences gained through the activities related to BMM stages one and two and outlined in Table 4-4, I specified individual learning throughout the process and connected it to the activities. The field notes were then analyzed as an interactive process among the authors in Paper 3, by discussing, condensing, and connecting them to the first two BMM stages. The outcome from this process revealed that several of the experiences had already been specified in BM literature, such as stakeholder involvement, investment objectives agreement, and establishing the foundation for BM before implementing specific technology. However, the specified individual experiences can be used to improve future BM processes—but mechanisms for this were scarce in the BM literature. Organizational learning theory (Argyris & Schön, 1996), specifically the SECI-process provided by Nonaka, Toyama and Konno (2000), was then applied as an analytic lens for suggesting how individual learning from the BM process could be transferred into organizational learning. Discussions among the authors were also used in this part of the analysis to adjust and refine the outcome. The results of the analysis can be found in Askedal, Flak, Solli-Sæther and Straub (2017b), shown in Appendix C.

Case 2

Creswell (2009, p. 185)'s qualitative data analysis framework guided the data analysis in Case 2.

<u>Semi-structured interviews</u>

All 50 interviews were transcribed in NVivo. The interviews were analyzed using different techniques in the two papers, according to the research scope.

In Paper 4, 24 interviews were coded in NVivo guided by a qualitative methodology of first and second cycle coding provided by Miles, Huberman and Saldana (2013). The interview guide used for conducting the interviews was developed based on the BM literature. Aside from that and my pre-understanding (Sandberg, 2009), no analytic lens was used to guide the analysis. This kept the analysis open to what the informant wanted to say, rather than forcing the data into predefined codes (Miles et al., 2013). The interviews were first coded by labeling "data chunks," then organized into categories to integrate them as a part of a system. Finally, the categories were combined into concepts for general constructs

(Saldaña, 2013). The interview analysis was conducted entirely by me, but discussions with my supervisor regarding interpretations took place along the way. The concepts and categories related to understanding the complexity of BM in the TIP can be found in Askedal (2019), shown in Appendix C.

In Paper 5, an analysis of the 50 interviews was conducted by focusing on tensions aimed at increased understanding about the underlying mechanisms of the TIP collaboration partners, based on the document analysis that provided a timeline of TIP events. This resulted in an outline of multiple tensions that were discussed among the authors and coded into three categories. Some tensions were related to elements that were out of TIP control, some required negotiations between TIP partners, and some required clear project management. However, the analysis of tensions from the 50 interviews was only used to gain an overview of the case, in addition to the initial document analysis.

Next, an analysis was conducted of 12 stakeholders (representing the different TIP partners, both project organization and operation) by applying the key BM concepts outlined in Table 2-2. NVivo was used for the initial part of the analysis, then the findings were summarized in MS Excel. I did the majority of coding, to identify tensions and apply the BM key concepts; however, I discussed the analysis with the co-authors several times, which refined the outcome. The analysis results regarding tensions and BM key concepts are published in Askedal, Flak and Aanestad (2019), shown in Appendix C.

Document analysis

Several versions of the TIP documents outlined in Table 4-7 were analyzed to summarize the key events of the case. The time, event, discussions, and eventual decisions were structured in MS Excel and a simplified timeline was developed in Visio based on the initial detailed overview. The timeline was not included in any of the Case 2 papers but is illustrated in Figure 5-3. However, textual description of case development was included in Paper 5.

After developing the detailed and simplified overview, four versions of the project charter (v. 2-5, version one is not available) were analyzed to identify how the BM key concepts evolved during the TIP. The four versions of the project charter were initially coded using NVivo, then summarized in Excel along with the outcome

from the 12 interviews. The analysis results from the case development and evolving key BM concepts is reported in Askedal et al. (2019), shown in Appendix C.

4.2.3 Validity issues

Validity is a qualitative research strength (Creswell, 2009), and assesses whether the study results are accurate from the researchers, informants, and readers perspectives. Applying multiple validity strategies (e.g., Creswell, 2009; Klein & Myers, 1999), increases the ability to assess the accuracy of results and adds credibility for the readers (Creswell, 2009). During data collection and analysis, I applied seven validity principles developed and recommended for IS interpretive field studies to ensure accurate and credible findings.

It is also necessary to clarify the researchers role to identify potential bias (Creswell, 2009; Klein & Myers, 1999; Walsham, 1995b). I described my researcher role in Section 4.2.1. However, in both cases I was a participant observer, which means "*being a member of the field group or organization, or at least becoming a temporary member for some period of time*" (Walsham, 1995b, p. 77). This gave me an inside view of the initiatives and stakeholders and influenced the research outcome (Walsham, 1995b).

Table 4-9 summarizes Klein and Myers (1999) applied validity principles with examples from the study.

Table 4-9: *Validity issues*

No	Principle	Study example
1	The fundamental principle of the hermeneutic circle	Data collection and data analysis was conducted through multiple iterations. Both in the independent papers (from respondents to the specific research focus) and in contributing to the overall research objective (from independent studies to the two RQs).
2	The principle of contextualization	Descriptions of the overall case context (Section 5.1) in addition to detailed descriptions of the two cases (Section 5.2) was provided. Reflections on stakeholder perspectives and the given eHealth initiative, impact of the overall context and evolving case were reported in the separate papers and in this doctoral dissertation.
3	The principle of interaction between the researchers and the subjects	As a participant observer in Case 1 and 2, I developed an understanding of the phenomenon. My inputs during the studies may have influenced the interpretations. This interaction, referred to as a double hermeneutic (Walsham, 1995b) is acknowledged in this study.
4	The principle of abstraction and generalization	This study (contribution to the overall research objective) in addition to the independent studies (contributions to RQ1 & RQ2) interpreted detailed data to develop general concepts (e.g., governance and learning). Since the study objective was to contribute to the BM literature, the outcome sought to utilize the case studies' potential for analytic generalizability rather than generalizing to a population.
5	The principle of dialogical reasoning	The philosophical grounding was described in Section 4.1. Gaps between the analytic lenses used and the findings have been reported. However, in Paper 4, the findings were not analyzed into preexisting codes but fully reported the case results and interpretations.
6	The principle of multiple interpretations	Tables 4-3 and 4-5 summarize the multiple levels, roles, and stakeholders (organization units and societal) the informants represented.
7	The principle of suspicions	Several data sources were used in this doctoral dissertation to reduce potential bias. Reflections regarding this principle were included in Paper 3, where stakeholders seemed to withhold information out of suspicion regarding the underlying motives for activities in the BM process.

Following up on Figure 4-1 which specifies multiple approaches to the study objective, Figure 4-2 illustrates how the chosen research strategies were applied in that respect.
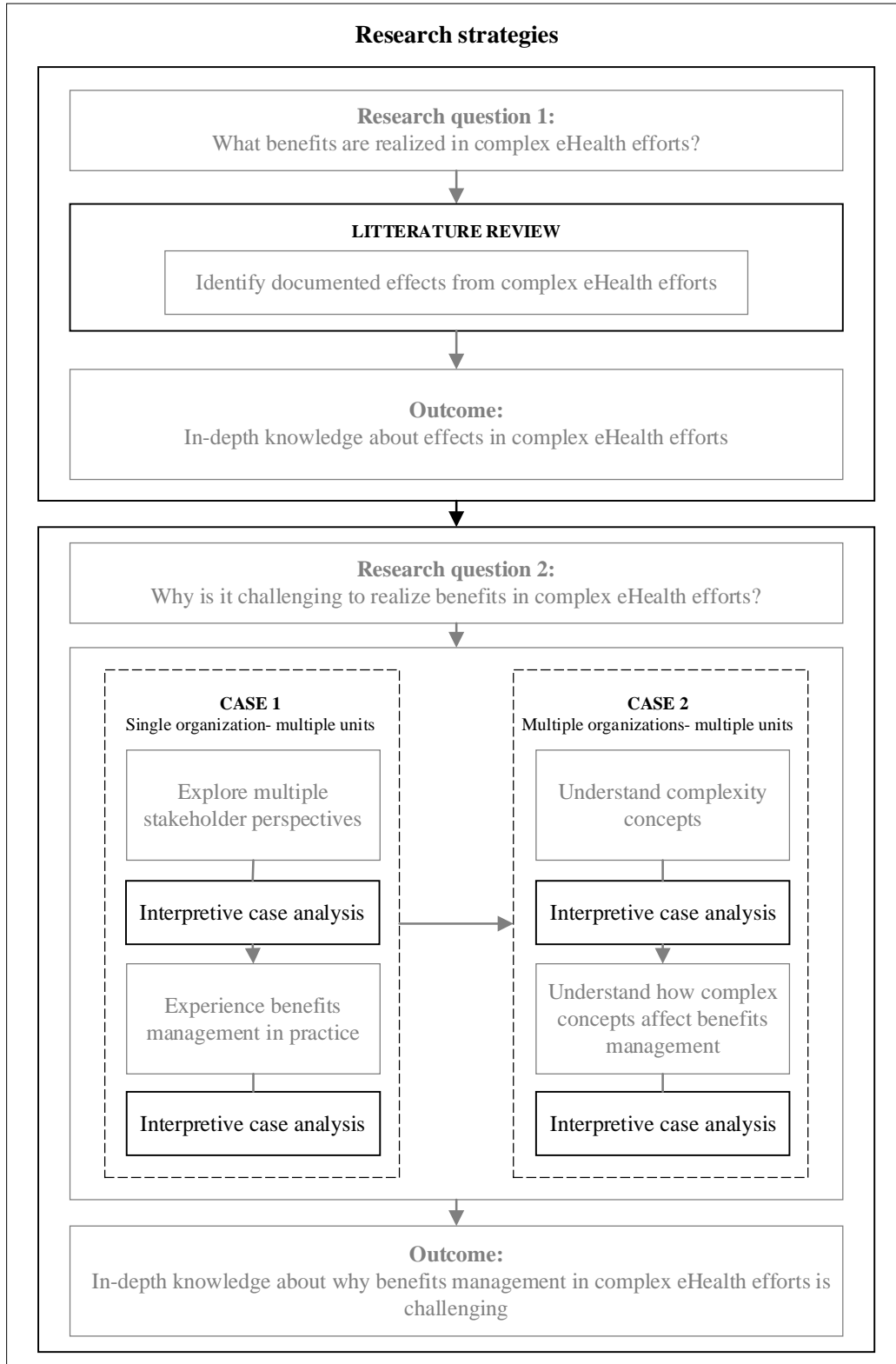
5   Case overview

This chapter provide details on the two cases used to address RQ2, including an overview of the study context. A brief introduction to the Norwegian health system provides the overall context for the cases and its effect on the results interpretations (Eisenhardt, 1989).

5.1   Norwegian health context

Norway is a relatively small country located in the northern part of Europe, with approximately 5.3 million inhabitants. The number of Norwegian citizens has increased over the last decades from immigration and high fertility, and trends indicate continued population growth, but not as heavy as in previous years. The number of people above age 70 living in rural areas and the number of immigrants above age 35 are expected to increase. Further, in 15 years, people over age 65 will become the majority. Norwegians' health has improved over the last decades, and by 2060, the average life expectancy is projected to further improve from the current 81 years to 88 years for males and from 84 years to 90 years for females (Leknes, Løkken, Syse & Tønnesen, 2018).

5.1.1   Societal level

The state power in Norway is divided into three branches, an important part of the democracy: 1) legislative power lies within the parliament, which decides the laws; 2) executive power lies within the government, which rules the country based on the laws decided by the parliament; and 3) judicial power lies within the courts who interpret the laws and judge (Stortinget, 2018). The highest executive authority in Norway is the King, but in practice, the Prime Minister and the ministers have executive power (Ringard, Sagan, Saunes & Lindahl, 2013).

Currently, there are 15 ministries governed by 19 ministers, including the Ministry of Health and Care Services (Regjeringen, n.d.). The ministries have directorates (currently around 60) who function as national government agencies that assist ministries with professional work and implementing actions (Regjeringen, 2015).

The Norwegian healthcare system is characterized as semi-decentralized and organized into three main levels: state, health regions, and municipalities. Figure 5-1 illustrates the Norwegian health system's hierarchical and regulatory structure, which is built on the principle of "*equal access to services for all inhabitants,*

regardless of their social or economic status and geographical location" (Ringard et al., 2013, p. 15). Therefore, all citizens are entitled to essential care and medical services. For instance, hospital admission is free, but many other services impose a fee; however, when fees are substantial, an exemption card is issued (The Norwegian Directorate of Health, 2019).

The Ministry of Health and Care is responsible for Norwegian healthcare services, determines the national health policy, and allocates healthcare funds. Subordinate agencies such as the Directorate of Health and Directorate of eHealth help the Ministry implement policies (Ringard et al., 2013).
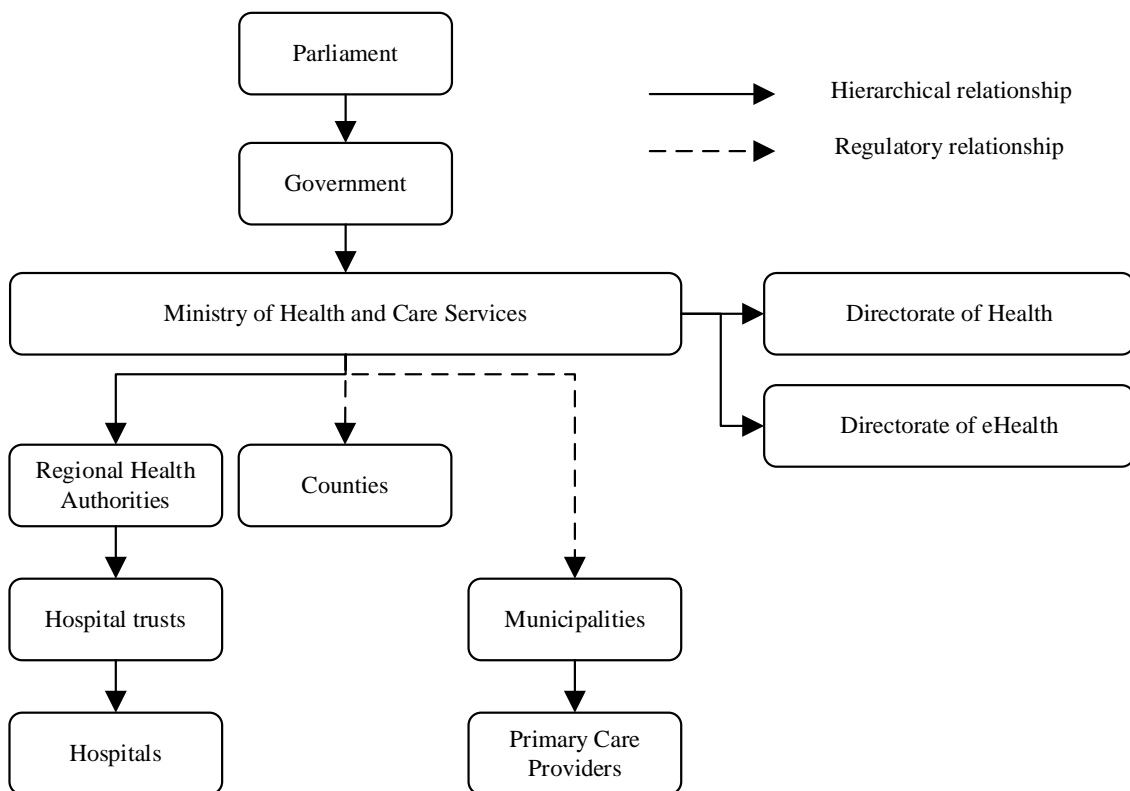
Figure 5-1: Simplified overview of the Norwegian health system (Adapted from Ringard et al., 2013)

5.1.2 Organizational level

The Ministry of Health and Care owns the regional health authorities, which in turn own the hospital trusts, and thus are accountable for providing specialized care. Hospital care is funded by block grants from the state allocated through the regional authorities to the health trusts based on their needs, in addition to activity-based funding based on reported disease and surgical procedure data (Ringard et al., 2013).

The municipalities have freedom to provide primary care, such as rehabilitation services or long-term care, and are directly responsible for provision of primary care. The ministry has no direct control over the municipalities, except decisions regarding GP funding; however, the national authorities assure service quality through funding and legislation. The municipalities main source of funding is the central government through block grants. In addition, primary care is financed by municipal taxes and grants for specific purposes (Ringard et al., 2013).

Each citizen is entitled to be assigned a GP who is, among others, responsible for primary diagnoses, treating everyday problems, and promoting health in their municipality. Further, the GP can assess specialist care if needed, and function as a gatekeeper for patients. Most GPs are self-employed but have contractual relationships with municipalities and are remunerated by the municipalities, patients, and The Norwegian Health Economics Administration (Ringard et al., 2013).

5.1.3   Interorganizational level

In Norway, interorganizational eHealth initiatives within and across public (e.g., municipalities and hospitals) and private (e.g., technology vendor) organizations are frequently due to a mindset of co-creation of health service values among actors (Ministry of Trade, 2018; The Research Council of Norway, 2018). With digitalization, there has been substantial growth in interorganizational collaboration in general (e.g., van Fenema & Keers, 2018), and in eHealth initiatives (Garmann-Johnsen & Eikebrokk, 2014). eHealth efforts focusing on specific technologies, such as digital night surveillance (Eikebrokk, Nilsen & Garmann-Johnsen, 2017) are an example of a temporary interorganizational eHealth effort. Additionally, an eHealth initiative in the Agder region (southern part of Norway) provides an example of a longstanding interorganizational strategic initiative among 30 municipalities to ensure a holistic view and large-scale implementation of eHealth solutions. The initiative was established as a network and named Regional Coordination Group eHealth and welfare technology Agder, RCG (Løyning, 2019).

The organizational, interorganizational, and societal levels played an important role for this study's findings and will be referred to frequently in the following text. To avoid comprehensive explanations when the three levels are mentioned

and prevent mixing with Lennon et al. (2017) levels (macro, meso, micro), they will be referred to as organizational, interorganizational, and societal levels. Examples of stakeholders at the different levels, including related issues, are presented in Papers 4 and 5, shown in Appendix C (Askedal, 2019; Askedal et al., 2019).

5.2   Case description

Two complex eHealth initiatives (telecare and telemedicine) in public healthcare services in a southern region of Norway were investigated. Different elements of BM were studied to gain an in-depth understanding of why it is challenging to realize benefits in complex settings. Since BM literature (Ward & Daniel, 2006, 2012; Ward, Daniel & Peppard, 2008) indicates that the first two BMM stages are essential to establish a solid foundation for BR, these stages were the core focus of this dissertation; therefore, empirical data were collected in early stages of both cases.

5.2.1   Case 1: Single organization- multiple units

In 2015, on behalf of two counties (made up of 30 municipalities), a municipality in the southern part of Norway was asked by the Norwegian Directorate of Health to establish a Response Central for managing safety alarms and other sensors (telecare) for municipal healthcare service recipients. The initiative received financial support from the Directorate of Health to procure technical solutions but financed the remaining costs themselves. During the fall of 2015, the initiative was organized into two sub-projects: technology procurement (telecare) and developing recommendations for optimal organization of the service. New sub-projects and focus areas were added as the case evolved, such as physically establishing the service, interorganizational collaboration, and BM. Figure 5-2 lists the stakeholders identified during data collection in an early phase of the initiative.

Health personnel in out-of-hours emergency primary care

Health personnel in home care services

Health personnel in telemedicine center

Directorate of Health

Politicians

Collaboration partners (municipalities in the region)

Senior Citizen Council

Response Central

Professional associations

Technology vendors

Technical staff/IT department

Patients and their relatives

Top managers for health and social services

Service managers for mental health and social work

Service managers for health and care

Figure 5-2: Stakeholder overview of Case 1

The traditional way of managing safety alarms and sensors at that time was through healthcare professionals working directly with patients in homecare services. This required homecare workers to manage alarm releases in addition to their planned assignments and busy schedules. The intention of this eHealth effort was to reorganize telecare management by routing alarms to dedicated healthcare professionals in a Response Central without disturbing homecare services healthcare professionals. An important objective of this initiative was to release resources. The initiative would lead to a major change in workflow and healthcare service provision. Therefore, a thorough analysis of current and future services in addition to identifying whether this service was similar to other municipality services (e.g., out-of-hours emergency primary care or telemedicine services) were

prioritized to enable optimal organizational change in the municipality where Response Central would be established, and for the collaboration partners (e.g., the other municipalities in the region).

Response Central was opened in March 2017 and operated by the municipality who received the request from the Norwegian Directorate of Health in 2015. Response Central handled multiple telecare solutions and provided services to 19 other municipalities in the region through inter-municipal collaboration. Additionally, 20 municipalities from other areas in Norway received services from Response Central.

Although Case 1 was originally a collaborative eHealth initiative among several municipalities, Paper 2 and 3 report experiences from early BMM stages in one of the organizations. This focus was based on the project steering committee's concern that it would be extensive and time consuming to agree on a common benefits realization plan across potential collaboration organizations. It was then decided to develop a general benefits plan that focused on one organization and share it with the rest of the partners. A BM focus was highly prioritized in the eHealth initiative. Additionally, I was employed in the selected "BM organization" at that time and involved in the specific eHealth initiative. Case 1 was an ideal base for exploring the emerging phenomenon.

Steering committee decisions and the rapid societal changes from digitalization and the subsequent growth in organizations collaborating to reach common goals (Boonstra & de Vries, 2008; Garmann-Johnsen & Eikebrokk, 2014; Ward & Daniel, 2012), sparked the attention from not only studying BM in a single organization but to also including the context of multiple organizations. If realizing interorganizational and societal benefits was the driver for interorganizational collaboration, excluding a joint BM process would implicitly limit the knowledge gained about whether common goals were achieved. Thus, less arguments to justify the efforts and resources spent on interorganizational eHealth initiatives. In addition, BM practices are not suited to the stakeholder complexity associated with interorganizational ICT efforts (Flak et al., 2015). Based on these arguments, Case 2 provided an excellent initiative to further explore and understand why BM is challenging in complex eHealth efforts from an interorganizational perspective.

5.2.2 Case 2: Multiple organizations—multiple units

The TIP evolved from public and private organization efforts between 2016 and 2019. As an effort to develop innovative solutions to address the expected challenges of future service provision (e.g., an imbalance between the number of patients who need help and the number of healthcare professionals available), the organizations contributed their resources and capacities to reach the TIP overall goal stated in the project charter: *"To test and evaluate a common telemedicine solution for remote monitoring of patients with chronic diseases or comorbidity among 30 municipalities, providing good healthcare services with less use of healthcare resources."*

The TIP was built on experiences gained from a European Union project, *United 4 Health*, and a regional project, *Collaborative Point of Care*, funded by the Research Council of Norway (VERDIKT program) and unfolded in the majority of the TIP actors from 2012 to 2015. The previous project focused on telemedical services for patients suffering from chronic obstructive pulmonary diseases (COPD) and resulted in increased knowledge of telemedical solutions across organizational boundaries. However, new questions were raised regarding organizational issues and technical solutions (e.g., health economic impact of telemedical services, quality of life, and patient empowerment) and therefore, in 2015 the collaborating actors applied for the *ICT and Digital Innovation* (IKT Pluss program) project, a continuation of the VERDIKT program, announced by the Research Council of Norway. Since the TIP project proposal was aligned with the IKT Pluss program, deeply rooted in research, run by the problem owner in the public sector, and had potential for value creation, the project received funding from the Research Council of Norway.

Seven organizations were present in the TIP, five from the public sector (three municipalities, one hospital, and one university) and two from the private sector (one technology vendor and one consulting company). The actors represented and contributed different knowledge, responsibility, and roles needed for the stated objective (see Table 5-1), which was organized into five work packages. The TIP partners signed a consortium agreement that regulated the TIP organization, as well as the actors' interests, expertise, commitments, and rights.

Table 5-1: *TIP organizations and main responsibility/contribution*

TIP organizations	Main responsibility/contribution
Three municipalities	Main actors for providing telemedical services to patients with chronic diseases (COPD, heart failure, type 2 diabetes, mental health issues, or a combination of these, called comorbidity) through telemedical centers (TMC) administered by nurses. Three TMCs were established, one in each of the participating municipalities. Based on defined criteria set by the TIP, the municipalities were also gatekeepers for enrolling patients into the project.
Hospital	Main actor for developing the triage used for patient treatment given by nurses at the municipal TMC's, and further accountable for patient treatment quality assurance.
University	Main actor for research and suggested improvement initiatives through the TIP period. In addition, the university was the main actor for developing and implementing solutions for artificial intelligence.
Technology vendor	Main actor for providing the chosen telemedical solution to the TMCs, securing the storage of sensitive data in Norway, and assuming responsibility for the logistics of medical devices used by the patients.
Consulting company	Main actor for project management

Monitoring and treating patients via telemedical services represented a substantial change from the existing practice of face-to face care and, thus, required service innovation. In addition, the TIP represented organizational innovation in that the distribution of service responsibility could be altered among the actors. For instance, a central aim was to prevent exacerbation of chronic diseases and reduce hospitalization, which would shift the care load away from hospitals to municipal services. A simplified TIP timeline is illustrated in Figure 5-3 and was part of the findings from Case 2 since documents were analyzed to develop the overview.

2016

January 2016 - June 2016

Project Kick-off. Hospital was project owner and manager. Project charter (No.1) was approved. Hospital withdraws project ownership and management. Municipality 2 continues with COPD TM service provision through TMC. Municipality 1 was awaiting TM service provision until criteria for enrollment in telemedical patient pathway/telemedical solution was clarified. Municipality 3 wants to start with TM service provision.

July 2016 - December 2016

Municipality 1 was new project owner, Hospital continues as TIP partner. External consulting company was project manager. Intention to choose TS. New project charter (No. 2) was approved. Revised consortium agreement and communication plan were approved. Revised project application was sent to NFR. Contract was signed between NFR and municipality 1. Consortium agreement between the TIP partners (hospital, university, municipal 2 and 3, consulting company) and municipality 1 were signed.

January 2017 - June 2017

Evaluating previous project (U4H). Technology vendor was included as TIP partner. New role as assistant TIP manager from municipality 1 introduced. First draft of telemedical patient pathway, including treatment triage for COPD were developed. TIP allows other municipalities in the region to use TMC. Project charter was revised (No. 3) and approved. Work-package descriptions were developed.

July 2017 - December 2017

Consortium agreement was revised.
Project charter was revised (No. 4) and approved. Document regarding ambition of volume of TIP patients was developed. Cooperation agreement (for other municipalities in the region) and data processing agreement were approved. Preventive service was approved as an criteria for TIP enrollment. First COPD-patient enrolled in municipality 1. Data processing agreement was signed between municipality 1 and Technology vendor.

January 2018 - June 2018

First meeting with TIP user representatives was completed. Endorsement to logistic management routines provided by the technology vendor and to participate in national welfare technology program (remote monitoring). First patient with heart failure Was enrolled in municipality 2. First «benefits management report» was presented. Endorsement to machine learning. Municipality 3 withdraws as TIP partner, replaced by municipality 4. The first cooperation agreement was signed (for other municipalities in the region). First type 2 diabetes patient was enrolled in municipality 1.

July 2018 - December 2018

First COPD patient was enrolled in municipality 4. Kick-off national welfare technology program. Project charter was revised (No. 5). The cooperation agreement was revised, no fees for other municipalities to connect to the TIP. Second «benefits management report» was presented.

2019

Figure 5-3: Simplified TIP timeline

6 Findings

This chapter summarizes the five publications that formed the basis of the dissertation. Figure 6-1 illustrates how the publications build on each other and gives an overview of the research. Each paper is elaborated describing the motivation, research approach, findings, and contribution to the specific topic. Finally, Figure 6-2 summarizes how the papers contributed to the overall research objective.

Table 6-1 lists the research publications. The full text is presented in Appendix C. Four of the papers (1-4) were published in peer-reviewed proceedings of conferences within the field of information systems and eGovernment (HICSS, AMCIS, eGov), and one paper (5) was published in a peer-reviewed journal (EJEG).

Table 6-1: *Overview of research publications*

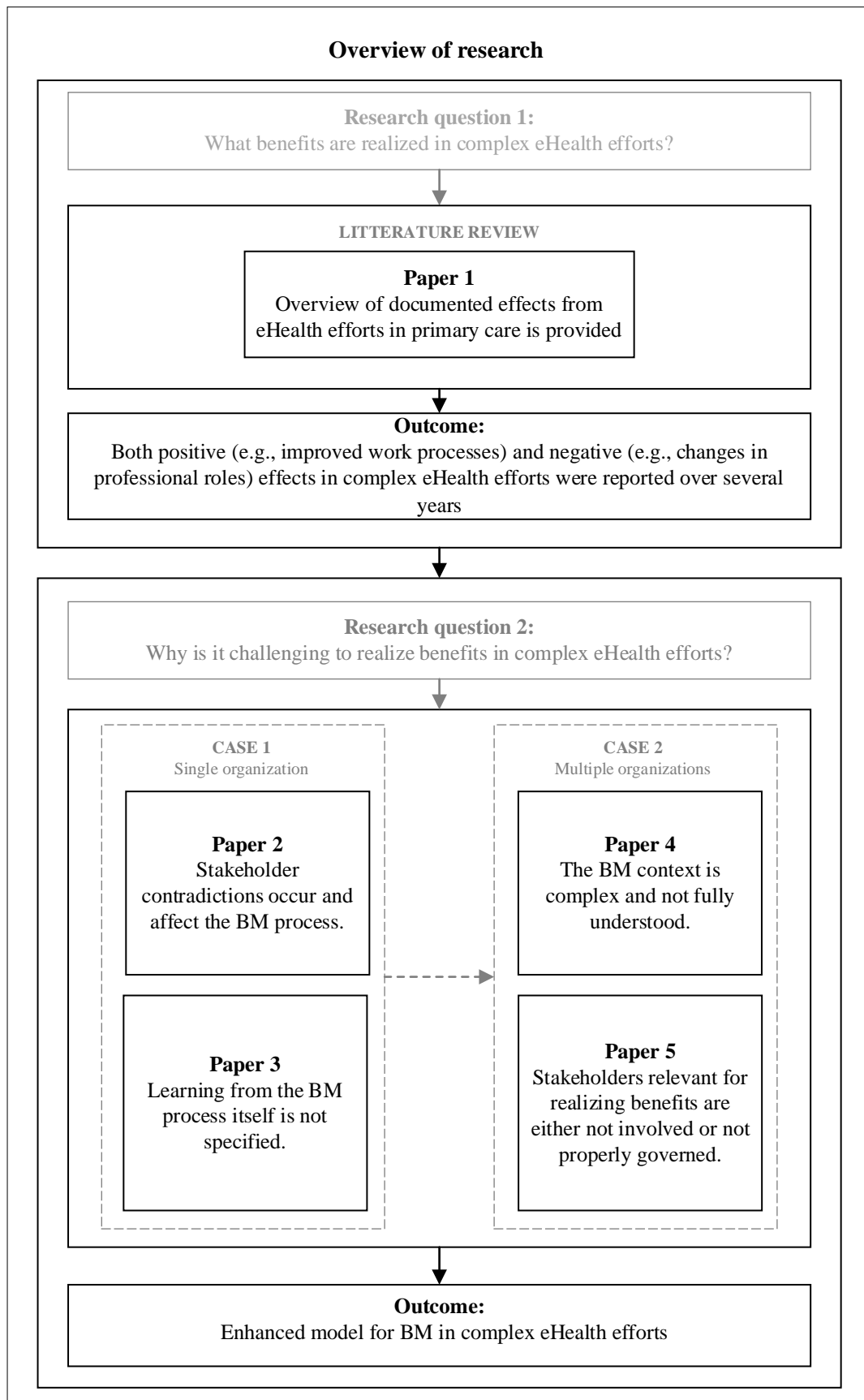| #	Research publications
1	Askedal, K., Flak, L. S., & Abildsnes, E. (2017). *Reviewing effects of ICT in primary healthcare services: A public value perspective.* Proceedings of the 23rd Americas Conference on Information Systems, Boston, MA.
2	Askedal, K., & Skiftenes Flak, L. (2017). *Stakeholder contradictions in early stages of eHealth efforts.* Proceedings of the 50th Hawaii International Conference on System Sciences, Big Island, HI.
3	Askedal, K., Flak, L. S., Solli-Sæther, H., & Straub, D. (2017). *Organizational learning to leverage benefits realization management; Evidence from a municipal eHealth effort.* Proceedings of the International Conference on Electronic Government, St. Petersburg, Russia.
4	Askedal, K. (2019). *Understanding the complexity of benefits management in an interorganizational eHealth effort.* Proceedings of the 52nd Hawaii International Conference on System Sciences, Maui, HI.
5	Askedal, K., Flak, L. S., & Aanestad, M. (2019). Five challenges for benefits management in complex digitalisation efforts- and a research agenda to address current shortcomings. *Electronic Journal of eGovernment.*

Overview of research

What benefits are realized in complex eHealth efforts?

↓

LITTERATURE REVIEW

Paper 1
Overview of documented effects from
eHealth efforts in primary care is provided

↓

Outcome:
Both positive (e.g., improved work processes) and negative (e.g., changes in
professional roles) effects in complex eHealth efforts were reported over several
years

↓

Research question 2:
Why is it challenging to realize benefits in complex eHealth efforts?

↓

CASE 1
Single organization

Paper 2
Stakeholder
contradictions occur and
affect the BM process.

Paper 3
Learning from the BM
process itself is not
specified.

CASE 2
Multiple organizations

Paper 4
The BM context is
complex and not fully
understood.

Paper 5
Stakeholders relevant for
realizing benefits are
either not involved or not
properly governed.

↓

Outcome:
Enhanced model for BM in complex eHealth efforts

Figure 6-1: Overview of research

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6.1 Paper 1: Review effects

Askedal, K., Flak, L. S. & Abildsnes, E. (2017). *Reviewing Effects of ICT in Primary Healthcare Services: A Public Value Perspective.* Paper presented at the 23rd Americas Conference on Information Systems, Boston, MA.

The objectives of the first paper were to provide an overview of effects when technologies are introduced in primary healthcare services, and further, to describe to what degree the reported effects are documented. The background for conducting this study was based on previous research (Hofmann, 2013; Martin et al., 2008; Wootton, 2012), which reported that there are a lot of expectations for implementing ICT in healthcare services, but little knowledge of achieved effects after implementing technology in this setting. Evaluating the effects of eHealth implementation is fundamental to filling gaps in the existing literature (RQ1) and because the increased knowledge provides a foundation for future research actions concerning the overall research objective.

To answer RQ1, a literature review analyzed 138 papers from a wide range of outlets covering information systems and healthcare. A public values framework (Rose et al., 2015) was used as an analytic lens, since ICT implementation in the public sector has implications for public values (Bannister & Connolly, 2014). Further, healthcare benefits include societal values, such as quality of life and absence of disease in addition to traditional benefits, such as cost reduction and increased efficiency (Sherer, 2014).

The analysis revealed three major findings on the effects of implementing technology in healthcare services, which contributed to both research and practice. Using a public values framework to guide the analysis generated descriptive knowledge, so the results were organized by public value dimensions, units, and impacts. First, the findings provided an overview of effects suggesting that the number of known and documented effects were substantially greater than what has been suggested in the literature to date. Second, effects related to *service improvement* (e.g., service quality) showed the highest prevalence in the sample (121 papers), *administrative efficiency* (e.g., productivity) had the second highest prevalence (79 papers), and *citizen engagement* had the lowest prevalence (8 papers). Third, different impacts (e.g., positive and negative) were reported for

technologies implemented in primary healthcare services. Table 6-2 summarizes Paper 1.

Table 6-2: *Summary of Paper 1*

Summary of Paper 1
• This paper indicates that several effects, both positive (e.g., improved work processes) and negative (e.g., changes in professional roles), have been documented from eHealth initiatives in primary healthcare services. • Discovering both positive and negative outcomes triggered further investigation into why it is challenging to realize benefits in complex eHealth initiatives.

6.2   Paper 2: Explore multiple stakeholder perspectives

Askedal, K. & Skiftenes Flak, L. (2017). *Stakeholder Contradictions in Early Stages of eHealth Efforts.* Paper presented at the 50th Hawaii International Conference on System Sciences, Big Island, HI.

The second paper identified stakeholder contradictions in the concept phase of a primary care eHealth initiative (Case 1). Choosing this research as a next step following the literature review was driven by the findings in previous study suggesting that implementing technologies in healthcare services can have both positive and negative effects. Therefore, a thorough understanding of why BM is challenging was relevant to the overall research objective.

Ward and Daniel (2006) argued that a stakeholder analysis in the initial phases of a project is crucial for BM, especially for public sector initiatives that have a more diverse body of stakeholders then private sector initiatives. It is important to identify and understand the involved parties and determine whether and to what extent the initiative affected them because it will influence the process of implementing required changes that may facilitate realizing the expected benefits. However, previous research on eHealth initiatives focused on the singular perspective of healthcare professionals (Hoerbst & Schweitzer, 2015; Sävenstedt et al., 2006) and paid scant attention to complex drivers.

The Case 1 study design combined observation and focus group interviews representing different levels of primary healthcare services (managers, health personnel, and technical personnel) and end user representatives (15 interviews,

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including 64 informants) to identify stakeholders and contradictions early in the process. The key stakeholders analysis was guided by Stakeholder Theory (Freeman, Harrison, Wicks, Parmar & De Colle, 2010) and the Dialectic Process Theory (Van de Ven & Poole, 1995) guided the identification of contradictory interests. A combination of these two theories has been used in eGovernment research, a research domain that is similar to eHealth (Flak, Nordheim & Munkvold, 2008). This study illustrated the usefulness of combining the theories in a public eHealth context as well.

The analysis identified two main stakeholder contradictions: 1) personalized service versus quick and efficient service, and 2) technology enthusiasm versus reluctance to change. Although the results did not reveal contradictions specific to the eHealth context, this study revealed the importance of understanding the stakeholder interests to address emerging or potential conflicts. This knowledge is also relevant to BM because it supports the practice to focus properly in a demanding reality. Table 6-3 summarizes Paper 2.

Table 6-3: *Summary of Paper 2*

Summary of Paper 2
• This study provided multiple stakeholders' perspectives from early stages of an eHealth initiative, and thus contributes to knowledge, because previous research often focused on a single perspective.
• The findings revealed contradictions among stakeholders and highlighted the importance of understanding stakeholder complexity to manage potential conflicts that may affect the eHealth initiative's BM process.

6.3   Paper 3: Experience BM in practice

Askedal, K., Flak, L. S., Solli-Sæther, H., & Straub, D. (2017). *Organizational learning to leverage benefits realization management; Evidence from a municipal eHealth effort.* Proceedings of the International Conference on Electronic Government, St. Petersburg, Russia.

The third paper reported experiences from the Case 1 BM process and described how individual learning from the BM process can be translated into organizational learning. The motivation for framing the study this way is based on previous research reporting little empirical evidence of the BM process as it unfolds in

practice (Ashurst et al., 2008; Doherty, 2014) despite that several BM frameworks have been developed and adopted (Hellang et al., 2013). Further, in the eHealth field, realizing expected benefits has proved difficult (Essén & Conrick, 2008; Henderson et al., 2014; Henderson et al., 2013), with varying effects reported (Askedal et al., 2017a). In choosing organizational learning theory (Argyris & Schön, 1996) as the analytic lens for this research, in combination with the existing BM literature (Ward & Daniel, 2006, 2012), the results contributed to increased knowledge of BM in practice and suggested ways to improve similar practices in future efforts.

An eHealth initiative in primary care was selected (Case 1) based on the study objective. Data were collected through participant observation, with one of the authors acting as the Benefits Realization Process Manager for the studied case. During a three-month period in fall 2017, several activities were conducted among key stakeholders in one municipality following the KommIT methodology (The Norwegian Association of Local and Regional Authorities, 2013), which was inspired by the work of Ward and Daniel (2006). Field notes were analyzed interactively by all researchers.

Using the KommIT methodology was challenging in practice; several issues arose such as key stakeholders' insecurity regarding the purpose of focusing on benefits realization in general and also in this specific case. Based on the Benefits Realization Process Manager's experience, individual learning points from the first two stages of the methodology were specified, including suggestions for how these inputs could be used to revise the practice in future BM efforts.

In addition to increased knowledge about BM in complex eHealth efforts, two contributions for improving existing BM processes were drawn from this study: 1) individual learning should be specified and 2) individual learning should be translated into organizational learning. We proposed that these suggestions would lead to decreased stakeholder frustration levels, increased organizational performance and indirect BR in future similar-context BM processes. Table 6-4 summarizes Paper 3.

Table 6-4: *Summary of Paper 3*

Summary of Paper 3
• This paper provided empirical evidence of how BM unfolds in a single organization (gap-filling knowledge).
• The findings revealed that the BM literature and practice lack mechanisms for learning from the BM process itself.
• The lack of learning mechanisms in BM literature and practice may result in repeated flawed practice.

6.4   Paper 4: Understand complexity concepts and BM context

Askedal, K. (2019). *Understanding the Complexity of Benefits Management in an Interorganizational eHealth Effort.* Paper presented at the 52nd Hawaii International Conference on System Sciences, Maui, HI

The fourth paper explored central concepts of complexity in regard to an interorganizational eHealth effort and what challenges these concepts introduced for BM in such settings. The motivation for this research stemmed from both practice and theory. From a practical perspective, as experienced in Case 1, agreeing on a common benefits realization plan across potential cooperation partners (30 municipalities) was deemed too extensive and time consuming. Therefore, a general benefits realization plan was developed for one organization, as a starting point, with an intent to share the plan with the other organizations. However, in the long run, adopting the "easiest" way will have consequences for realizing common and societal goals, which are important drivers of interorganizational collaboration (Boonstra & de Vries, 2008; Garmann-Johnsen & Eikebrokk, 2014). Further, collaboration in complex contexts is increasing (Boonstra & de Vries, 2008; Christensen, 2017; Garmann-Johnsen & Eikebrokk, 2014; Ward & Daniel, 2012), but current BM practices are not suited to multi-faceted stakeholder complexity in interorganizational ICT efforts (Flak et al., 2015). However, previous research on such complex efforts is limited (Christensen, 2017) and future studies in this area are needed (Flak et al., 2015; Lönn et al., 2016) to improve existing BM practices and realizing common and societal benefits in future ICT initiatives.

To explore the unknown phenomenon in interorganizational ICT efforts, a case study design with an interpretive approach was used (Case 2). Based on a

stakeholder analysis, 24 semi-structured interviews with key stakeholders were conducted from September 2017 to February 2018. Relevant themes from the BM literature (Ward & Daniel, 2006, 2012) guided the interviews, such as current and future health service practices and experiences with specific eHealth initiatives. The interviews were coded, guided by the qualitative methodology of first and second cycle coding developed by Miles et al. (2013).

The analysis revealed four central concepts including categories of complexity in this case: collaboration structure and strategy, collaboration culture, collaboration technologies, and collaboration management. Additionally, four external concepts (national structures and strategies, societal stakeholders, digitalization, and demographic changes) and four organizational concepts (structure and strategy, culture, technologies, and management) emerged to challenge BM in this context. These concepts influenced each other both horizontally (e.g., between different organizations) and vertically (e.g., between organizations and the specific initiative). A semi-decentralized healthcare system that challenged collaboration and prevented sustainable eHealth services across health service providers is an example of BM challenges in this eHealth initiative. Table 6-5 summarizes Paper 4.

Table 6-5: *Summary of Paper 4*

Summary of Paper 4
- This paper provided knowledge about the unknown phenomenon of complexity in interorganizational ICT initiatives and highlighted the relevance for updated BM practices.   - The findings revealed that the BM context is expanded in eHealth initiatives where multiple organizations are involved in ways that existing models do not support (e.g., by introducing interorganizational and external concepts).   - The findings further suggested that the ambitions for realizing benefits will be more realistic if an expanded BM context is considered in advance of entering the BM process.

6.5 Paper 5: Understand how complexity concepts affect BM

Askedal K., Flak L.S., Aanestad, M. (2019). Five Challenges for Benefits Management in Complex Digitalisation Efforts - and a Research Agenda to Address Current Shortcomings. *Electronic Journal of eGovernment.*

The fifth paper investigated the challenges inherent in using existing BM frameworks in interorganizational digitalization projects. Based on a set of identified challenges, we proposed suggestions for extending the BM literature to accommodate these settings. This study's motivation was similar to that described for the fourth paper regarding the gap between currently available BM frameworks and the actual digital context facing the practice community (Flak et al., 2015; Gil-Garcia, 2012)). Additionally, Paper 4 uncovered areas that needed further exploration, such as identifying the benefit owners in interorganizational ICT efforts and identifying who has the ability to initiate the needed changes across organizations. The fourth study findings also, in part, motivated the fifth study, because knowledge about evaluating interpretive IS field research is relevant to RQ2 and also contributes to the overall research objective of BM in complex eHealth efforts. To identify BM challenges in interorganizational digitalization efforts, a case study design with an interpretive approach was used with an ongoing interorganizational ICT effort from public healthcare service in Norway (Case 2). Since a combination of data sources facilitates in-depth knowledge of the phenomenon (Mueller & Urbach, 2017), 50 semi-structured interviews with key stakeholders were conducted from September 2017 to February 2018 (24 of these interviews were also used in Paper 4) and combined with participant observation (two authors were directly engaged with the project) and document analysis (e.g., project proposal, project directive, consortium agreement, and work package descriptions), which together provided the basis for the analysis.

The empirical material analysis was completed in two phases. First, it was used to create a coherent story line and overview of key project events, which revealed a large number of preparatory and developmental activities, especially in the first two years. Despite substantial progress, the project was delayed by organizational challenges where tensions were identified among the participating organizations. Based on an in-depth understanding of the case, we moved on to the second phase of the analysis by focusing on BM challenges within and between the participating organizations. Different versions of the project charter and 12 key interviews

representing all participating organizations (members of the steering committee and personnel from operational services) were employed to key BM concepts shown in Table 2-2 (Ward & Daniel, 2012). By using the key concept as an analytic lens, the case illustrated where project challenges emerged and specific areas where existing BM literature needed adjustment to accommodate interorganizational digitalization efforts. For instance, organizational, interorganizational, and societal levels (see Section 5.1 for details) should be included in the first two BMM stages.

The analysis identified five challenges (e.g., understanding enabling changes, establishing ownership for enabling changes) related to areas where BM literature argue is relevant for establishing a solid foundation to enable BR (Ward & Daniel, 2006, 2012). The findings illustrated that existing BM frameworks are not suited to the reality of digitalization efforts in the public sector, which have become increasingly interorganizational (Gil-Garcia, 2012). Moreover, this study increased the understanding of which specific areas need development or new practices if digital transformation projects are to achieve their potential. Based on the results, five actions (e.g., change owners at the societal, interorganizational, and organizational levels are required) were proposed to be used as a research agenda to facilitate BM in complex settings aiming for societal benefits. Table 6-6 summarizes Paper 5.

Table 6-6: *Summary of Paper 5*

Summary of Paper 5
• This paper provides empirical evidence of how BM unfolds in multiple organizations (gap-filling knowledge).
• The findings revealed that establishing a foundation for BM in interorganizational eHealth efforts is far more complicated than in a single organization. Stakeholders representing different levels of organizations may control premises for changes required for realizing societal benefits and should be included in the BM process.
• The findings suggested that existing BM models need revision to cater to the level of complexity in interorganizational eHealth efforts aiming to realize common and societal benefits.

6.6 Summary of the five papers' contributions

Each of the five papers provided independent contributions to the overall research objective of understanding BM in complex eHealth efforts. Although the papers used different theoretical lenses to examine the phenomenon (Dennis, 2019) and operated as independent studies, they also build on each other's findings and each is of key importance for a holistic view of the phenomenon of BM in complex eHealth efforts.

Figure 6-2 illustrate how the individual papers contribute to the thesis as a whole. First, the relevance of investigating BM in complex eHealth efforts was revealed through review of prior eHealth research. Further, a novel and enhanced model for BM in complex eHealth efforts was developed based on the findings from the two cases (Figure 6-2). The model incorporated the BM context as a pre-stage of the BMM. Two distinct BMM's are suggested in the model to cater for the differences in complexity in organizational and interorganizational eHealth efforts. Finally, the new model included the critical aspects of learning (in both organizational and interorganizational BMM) and governance (in interorganizational BMM). The different elements in Figure 6-2 will be further elaborated and discussed in Chapter 7.
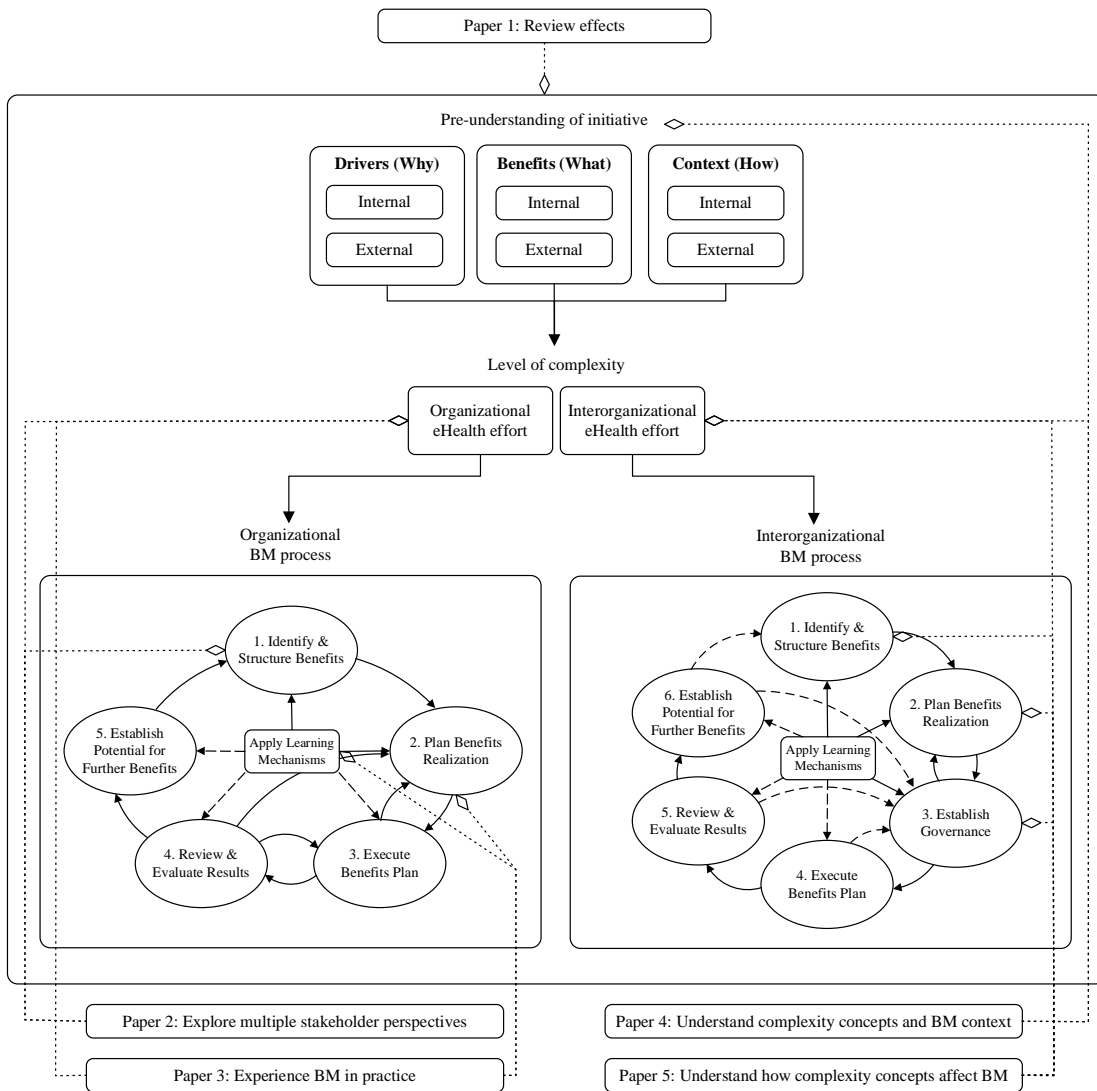
Figure 6-2: Summary of the five papers' contributions

7   Discussion

Chapters 2, 3, 4, 5 and 6 described the data sources and results used to address RQ1 and RQ2. The two RQs were investigated as steps, with the aim of contributing to the overall research objective: explore and understand the phenomenon of BM in complex eHealth efforts. However, since RQ1 guided the research process in addition to contributing gap-filling knowledge, it was addressed in Chapter 3 to provide a logical structure for this doctoral study. Even though RQ1 is not directly discussed in this chapter, RQ1 findings relevant to RQ2 are included in this discussion.

7.1   Challenges of realizing benefits in complex eHealth efforts

This thesis corroborates earlier findings that realizing intended benefits can be challenging (Doherty et al., 2012). Both positive and negative eHealth effort effects have been reported in studies over many years (e.g., Askedal et al., 2017a; Dham et al., 2018; Eden et al., 2018; McGowan et al., 2019). There is no simple answer to why it is challenging to realize benefits (Lake et al., 2017), but as long there are imbalances in the number of patients who need help and the number of healthcare professionals available, there is an urgent need for a deeper understanding of the phenomenon (Eden et al., 2018).

Drawing on this background, the motivation for contributing to the overall study objective through RQ2 is obvious. A prerequisite for providing valid contributions is to fully understand the problem before suggesting improvements.

In Section 2.2.1, BR and BM concepts were distinguished in an attempt to clarify the conceptual confusion regarding these two terms in the field. BR was defined as the generation of organizational value (dependent on changes and stakeholders), and BM was defined as the mechanism for managing changes and stakeholders required to achieve BR. BM is needed to enable BR; therefore, BM provides a conceptual foundation for investigating RQ2.

Based on Papers 2 through 5, two main aspects that challenge BM in complex ICT settings were identified.

First, mechanisms for learning from the BM process itself that can be used to improve future BM processes in similar contexts was identified as a barrier to

realizing benefits in complex settings. This area has limited coverage in BM literature and is absent in practice (Askedal et al., 2017b). My findings reveal how the BM context expands (organizational, interorganizational, and societal levels) when several organizations collaborate to achieve common and societal goals (Askedal, 2019). Consequently, the individual and collective knowledge gained from BM activities must be transformed at these levels. If experiences are not specified continuously during the BMM stages, and further managed at appropriate levels to optimize processes, BM in complex settings will continue to be treated as a challenge without pointing to specific areas needing improvement. This specific aspect can be abstracted to the archetypal problem of learning. As long as the BM context expands in interorganizational ICT initiatives (illustrated in Figure 6-2), the aspect of learning will implicitly be of importance at multiple levels. This is discussed further in Section 7.1.1.

Second, as the BM context expands along with the number of organizations that collaborate to realize common and societal goals (Askedal, 2019), the need for appropriate BM governance at multiple levels is a second aspect in why it is challenging to realize benefits in complex settings (Askedal et al., 2019). Apart from covering the issue of portfolio management in single organizations, BM governance and structures at interorganizational and societal levels remain scarce in BM literature. This issue is also absent in practice, leading to major BM challenges (Askedal et al., 2019). As organizations increase their interorganizational collaborations (van Fenema & Keers, 2018), appropriate structures for governing BM according to the scope of the initiative should be included in early stages of the BMM. This specific aspect can be abstracted to the archetypal problem of governance at multiple levels and is discussed further in Section 7.1.2.

In summary, the identified issues of learning and governance at multiple levels are RQ2's main contributions, and address what Doherty (2014, p. 186) emphasizes as a pressing need: studies that *"explicitly seek to critique the approaches through which this unacceptable level of waste might best be tackled."* This doctoral dissertation has thus identified and addressed a knowledge gap in the existing BM literature.

7.1.1 Lack of learning at multiple levels

The issue of learning at multiple levels is discussed in the context of the relevant literature presented in Chapter 3 (eHealth literature) and Section 2.2.2 (BMM).

Learning in eHealth literature

In reflecting on the aspect of learning in the presented eHealth literature, several observations can be made. The prior research review presented in Chapter 3 shows that both positive and negative eHealth initiatives effects have been reported for several years. Some authors claim that evaluations of the added value of eHealth initiatives are lacking (e.g., Martin et al., 2008; Njoroge et al., 2017; Van Grootven & van Achterberg, 2019), but a comprehensive review of prior research suggests otherwise.

However, some of the evaluations point to limitations in their work related to the size of the initiative and proposed upscaling the intervention to validate their findings (e.g., Bedson et al., 2019; Nyberg et al., 2019), and some cite the issue of limited perspectives in evaluations (Enam et al., 2018). Although context and technology play important roles for eHealth initiative outcomes (Lake et al., 2017), the scope of initiatives and limited number of perspectives in evaluations should not be an excuse for neglecting existing literature reports of effects in similar initiatives. Given the overall drivers for implementing technology into healthcare services, society does not have the time or resources to continue repeating initiatives without considering the experiences of previous efforts. Both experiences from their own organizations and other initiatives reporting positive and negative outcomes should provide a knowledge base for defining new eHealth initiatives. The importance of learning from others was also highlighted by one of the Case 2 informants:

> *In advance of embarking into such a large initiative* [TIP], *plenty of time should be spent to study what others in western countries that is natural to compare with, have done- so that we do not just make the same mistakes again…but it takes some time to study what others have done, and I don't have time to do that in my work. I think it is the one who is the project manager who is responsible for this- or delegate it to others…spend some time studying the literature, what* has *been*

done for this particular patient group, and what will one achieve…
[Doctor, hospital, Case 2].

Lennon et al. (2017)'s work can serve as a starting point for changing the focus from repeating the small-scale initiatives into large-scale initiatives that aim to realize societal benefits. The authors argue that readiness issues are present at three levels, including national policy (macro), information technology infrastructure (meso), and health professional readiness (micro). Findings reported from Case 2 (Askedal, 2019) corroborates Lennon et al. (2017)'s work in that the BM context was expanded into three levels (organizational, interorganizational, societal). This strengthens the argument for multiple organizational levels affecting eHealth initiatives that aim to produce societal benefits. Drawing on these findings, the uptake of experiences from eHealth initiatives should also be addressed at each of the different levels to improve future interorganizational eHealth efforts and avoid repeating flawed practice.

However, the lack of learning from previous eHealth initiatives may not have resulted from limited time or resources put aside for such works. It may simply have been a result of the format used to report the studies' outcomes. If only the effects outcomes are reported, and the individual or collective learning from the BM process itself are not specified, it may be difficult for others to learn how to achieve or avoid reported outcomes. Further, to learn from the multiple levels involved in interorganizational eHealth efforts, both individual and collective BM process experiences need to be specified and managed at the different levels in addition to the experienced outcome. Both learning and outcomes should be reported so others can benefit from them.

Learning in the BM literature
Among the BR and BM approaches adopted by practice, the BMM (Ward & Daniel, 2006) has been the most influential (Mohan et al., 2016; Waring et al., 2018) and still serves as a good reference (Flak et al., 2015). In addition to organizing benefits and costs, Farbey et al. (1994) pointed out that applying such a framework can present an opportunity for learning. During the BM process, framework's usefulness can be assessed to foster future improvements. For instance, knowledge and experiences are the basis for BM practices, which affect BM competence and advance BM capability (Ashurst et al., 2008).

The BMM is based on the TQM approach (Ward et al., 1996), which focuses among others on learning and continuous improvement (Bank, 1992; Hackman & Wageman, 1995). Learning and continuous improvement are also visible in the BMM but focus on evaluation and outcome improvement rather than the BM process itself. This is visible when reviewing the content of the five BMM stages, and also through experiences gained from practical use of the approach (Askedal et al., 2017b).

In BMM stages one and two, the notions of learning and improvements are lacking, both in BM literature and also in activities and tools customized to guide practice through the two stages (Askedal et al., 2017b). Important BM concepts, such as drivers, stakeholders, benefits, enablers, and changes, are stage one and two's core focus, and numerous analysis tools have been developed to address these issues in practice. Table 4-4 lists the tools used in Case 1. However, I found no guidance regarding how to specify individual or collective learning from the process itself from using these tools. The activities focus on establishing a solid foundation for the next BMM stages for the purpose of realizing benefits. The risk of not having mechanisms for learning from BMM stages one and two is repeating flawed practice that may affect the BM process foundation in complex eHealth efforts.

Stage three highlights the importance of adjusting the benefits plan according to occurring circumstances within or outside the organization that may affect intended benefit achievement. Projects lasting more than six to twelve months should expect changes in many factors within the organization and also in the wider context (Ward & Daniel, 2012). The focus here is outcome revision, and to some extent, learning and improvements. Still, the focus is not the process itself but the specific outcome of the given initiative. Since data were only collected from the first two BMM stages in Cases 1 and 2, no practical experiences regarding this issue can be reviewed. However, tools available to guide practice through this stage do not incorporate the perspective of learning from the process itself (e.g., The Norwegian Association of Local and Regional Authorities, 2013).

Stage four concerns evaluation and learning as the main purposes, both for identifying whether benefits have been realized, and for understanding how the BM process can be improved for other projects in the organization. This stage most clearly outlines the aspect of learning. For reviewing and evaluating results, the

BM literature suggests facilitating a meeting with the project manager, key stakeholders, and benefits and change owners two to three months after the benefits plan was implemented that focuses on the final outcome rather than what happened during the project. This is about the same time that knowledge about the investments is greatest (Ward & Daniel, 2006). Although learning from the process itself is mentioned in this stage, there are two issues related to learning that need to be recognized, given the findings from Case 1.

First, the focus of learning from the BM process itself may be introduced too late in the BMM if introduced for the first time in stage four. The first two BMM stages suggest several activities and tools for managing the process, such as developing a BDN (including a stakeholder analysis and driver analysis), developing a benefits plan, and developing a business case. Given the stakeholder complexity, in addition to establishing BM knowledge for improving issues such as stakeholder involvement and ownership (Ward & Daniel, 2006), the related activities in the early BMM stages are time consuming in practice (Askedal & Flak, 2017). Table 4-4 illustrates the scope of BM activities in stages one and two, which took about three months to complete in one organization. The BM literature suggests reviewing and evaluating results (stage four) about two to three months after implementing the benefits plan. Given the lapsed time between the BMM first stage and the fourth stage and the number of stakeholders involved, it is natural that gained knowledge and experiences relevant for improving BM practices may be lost before entering stage four. Therefore, introducing organizational learning into stage four is arguably too late. My findings show the importance of learning throughout the BM process. Therefore, mechanisms for learning must be considered in each of the five BMM stages.

Second, the aspect of organizational learning (i.e., understanding how the BM process can be improved for other projects in the organization) is almost invisible, compared to evaluating the initiative itself (i.e., determining whether benefits have been realized). Ward and Daniel (2006) stated that the focus for stage four should be the final outcome rather than what happened during the initiative. This statement is reflected when specifying BMM stage four (Ward & Daniel, 2006, p. 114 and p. 264). For instance, the heading; "review and evaluate results" can be interpreted to emphasize the process outcome more than the process itself. Further, most of the content elaborating stage four concerns benefits, and what might have

been learned to increase future initiatives outcomes. There is a lack of tools that guide practice for facilitating organizational learning. Compared to the multiple frameworks provided for managing the BM process in stage one and two, the focus on organizational learning is less important than indicated by the BM literature, since there are no mechanisms for specifying it. This may explain the limited focus on the BM process itself both in research and practice.

Stage five is a creative process involving all people who have gained knowledge about the given initiative, with the purpose of identify new opportunities for future efforts and using the outcome as the basis for new initiatives. The focus in the BMM last stage is how to improve BM in future efforts within the organization by identifying additional benefits and identifying actions needed to achieve them.

Based on this brief review of the BMM stages from the perspective of learning from the BM process itself, it is easy to see why this aspect may be lacking in the existing BM literature. The two papers from Case 1 (Askedal & Flak, 2017; Askedal et al., 2017b), especially Paper 3, specify experiences from the BM process itself. However, the outcome regarding realized benefits from Case 1 are not reported, so it is not clear whether the recommended step of specifying learning was successful. Still, the specified experiences gained from the two first stages in Case 1 are consistent with challenges mentioned in the existing BM literature, such as the importance of stakeholder involvement, investment objectives agreement, and establishing a foundation for BM before implementing specific technology. Nevertheless, if such experiences are not specified, the knowledge will remain less accessible to others, and potentially hinder efforts to improve existing BM approaches (Doherty, 2014).

Although all of BMM stages are important in the BM process, the two first stages function as a basis for the rest of the process (Ward & Daniel, 2006). However, if individual and collective learning gained from these two stages are not specified because there are no mechanisms or recommendations on how to incorporate this process, it is not surprising that studies reporting experiences from the BM process are lacking (e.g., Doherty, 2014). Further, the adequacy of BR and BM approaches has been questioned, given the challenge of delivering required benefits from ICT initiatives (Marnewick, 2017). Since few studies mention learning from the stages that facilitate the rest of the BM process, a knowledge base for improving BM

practices is missing. This may in turn affect the BM process in organizations because the process has not been adjusted accordingly, leading to repeated flawed practice (Askedal et al., 2017b).

Summary

The concept of learning from the BM process itself for improvement purposes is lacking both in eHealth practice and in the BM literature and may underlie repeated flawed practice. Several dimensions for learning have been described in this discussion, such as learning from others through published research and practice and learning from our own processes and initiatives. The BM literature focuses more on evaluation and revision of final outcomes in ICT initiatives than on mechanisms for organizational learning.

A learning focus should be incorporated into stages one and two to establish a knowledge base for improving the foundations of future BM processes. Drawing on the arguments presented here, the learning aspect is also important in all BMM stages and should be emphasized even more in stages three to five. Studies on how including this aspect into the BMM stages affects the overall outcome of the BM process are an excellent opportunity for future research.

Since the number of organizations that collaborate to realize common and societal goals is increasing (Boonstra & de Vries, 2008; Garmann-Johnsen & Eikebrokk, 2014), the scope of the BM context and how to establish a BM foundation needs to expand accordingly (Askedal, 2019; Askedal et al., 2019). The three identified levels that affect interorganizational eHealth initiatives are within organizations, across organizations (interorganizational initiatives), and societal (e.g., external stakeholders such as the government controlling the premises or funding initiatives aimed at realizing societal benefits) (Askedal et al., 2019). If the aim of such initiatives is to realize societal benefits, individual and collective learning from the BM process itself, especially from stages one and two, should be specified at each of the given levels for the purpose of increasing BR and avoiding repetition of flawed practice in interorganizational eHealth efforts. Given these findings, the learning aspects in each of the BMM stages, especially stages one and two, should be specified for all included levels affected by the initiative.

7.1.2 Lack of governance at multiple levels

This Section discusses the issue of governance at multiple levels from the perspective of the relevant literature presented in Chapter 3 (eHealth literature) and Section 2.2.2 (BMM).

Governance in the eHealth literature

Lake et al. (2017) conducted a meta-review of eHealth initiatives and found no definitive results for service quality, service access, and costs. The authors cited several factors that can affect measurements and validity, such as governance (e.g., policy priorities), organizational models for the given service (often co-existing across municipalities, networks, and regions) and finance (e.g., health care costs). Hence, context plays a role. This was also highlighted by one of the Case 2 informants:

> *I mean that the biggest barrier* [for telemedicine initiatives] *is the national economy model for healthcare services...The healthcare interaction reform has become more of a quarrel about money than real cooperation... The issue has been presented for the Norwegian Ministry of Health and Care. The Directorate of Health and the Directorate of eHealth are also familiar with the problem, but from there to do something and develop new economic models- that is hard. And this is what I see as the biggest barrier for telemedicine efforts in Norway. It may be a bit different when it comes to telecare initiatives because it mostly occurs within municipalities. Telemedicine may to a greater extent involve both GPs and special expertise from hospitals and collaboration across these levels. This is where you got the problems* [Professor, university, Case 2].

Lennon et al. (2017) suggested that issues influencing eHealth readiness occur on three levels: macro (e.g., national policy), meso (e.g., organizational resources), and micro (e.g., professional confidence). These findings coincide to some extent with the two papers from Case 2 (Askedal, 2019; Askedal et al., 2019). Here, the BM context was expanded to include three levels that affect the overall outcome of such initiatives. In addition to the levels mentioned by Lennon et al. (2017), units within organizations and the interorganizational level also play a role. Thus, interorganizational level is only relevant in interorganizational eHealth efforts that

aim to realize societal benefits. One of the Case 2 informants highlighted the context expansion:

> *It is important to be part of large-scale initiatives that really can take us further... not only small-scale trials and local issues. These are so big changes that we must think big… we must think about national infrastructure and standards… no, this isn't anything you deal with alone in a small municipality...* [Advisor, municipality 1, Case 2].

In light of this knowledge, specific eHealth initiative contexts are important to the outcome. However, since different context levels are represented by stakeholders that may regulate or influence related issues, these levels need to be managed accordingly and in line with the specific initiative's intended outcome. This argument is based upon a main findings in this thesis, that governing heterogeneous and multiple actors is challenging in interorganizational eHealth efforts, and appropriate governance is required at different levels for realizing societal benefits (Askedal et al., 2019). Eden et al. (2018) supported this argument by suggesting improved governance structures as one potential area for minimizing negative effects from eHealth initiatives. The notion of governance structures was also mentioned by one of the Case 2 informants:

> [If the TIP results are of societal value, but the municipalities are the ones who finance most of the service] *… then our role must not be to keep this knowledge locally, but simply address it at the right minister's table, saying; what are we doing with this? Because we have a structure in Norway which means that we do not have incentives to do this, rather the opposite. We might not even be able to do that, because it is not within our premises. We may have a benevolent city council that think it is interesting for our municipality, but it doesn't lead to a change in Norway. So, we have to lift the issues at the right place… then we become a party and could have discussed alternative financing solutions at the overall level* [Advisor, municipality 1, Case 2,].

Governance in the BM literature

There are few mentions of governance in the BM literature. Some references related to portfolio management highlight robust governance processes as important (Ward & Daniel, 2012). A governance structure for program management has also been suggested, but examples of how to govern portfolios have not been provided to my knowledge. However, a combination of BM and portfolio management may provide robust governance processes (Ward & Daniel, 2012). To the best of my knowledge, these elements of governance structures or processes have not been advanced in the existing BM literature. Additionally, the notion of program and portfolio management in the BM literature refers only to single organizations, which does not fully fit the current context and practice of interorganizational collaboration aimed at realizing societal benefits (Flak et al., 2015).

In the two papers reporting from Case 2, where partners collaborated to realize societal benefits, the scope of both the BM context (Figure 2-2) and BM key concepts for establishing a solid foundation for the BM process (Table 2-2) have been expanded (Askedal, 2019; Askedal et al., 2019). For instance, identifying benefits at interorganizational and societal levels is required to realize benefits at these levels. In addition, specifying benefits at different levels within the organizations (individual, group, organization) was suggested by Ward and Daniel (2012). In practice, this expansion caused challenges for BM that may stem from the specific telemedical concept in combination with contextual factors such as the partners, the Norwegian statutory financing system, and different stakeholder perspectives for realizing expected benefits. These findings indicate the need to expand the scope of how BM is perceived to organize and manage multiple actors within the initiative and to navigate and manage dependencies beyond the effort itself (Askedal et al., 2019). Hence, appropriate governance of organizational actors is required. Further, potential societal actors that may shape the space for necessary action to realize societal benefits must be included.

These findings, combined with the existing BM literature concerning the governance aspects, present arguments for portfolio management including BM at multiple levels for establishing robust governance structures in interorganizational eHealth efforts. The governance and structure aspects are important for realizing benefits in digitalization efforts, as described in Doherty et al. (2012), who argued

that top managers need to give directions to these structures. Their findings suggest that if governance structures are designed as interdependent portfolios for managing projects and benefits, benefits are likely to be realized because of the combined impacts of several initiatives rather than single projects. Therefore, a portfolio approach is an emergent theme and proposed as a success factor for BM. The results of this doctoral dissertation corroborate Doherty et al. (2012)'s arguments.

Further, Doherty (2014) proposed that future BM approaches pay attention to the importance of power and politics. Studies from Case 1 and Case 2 have identified these issues at different levels (organizational, interorganizational, and societal) that are impacting BR. A confirming statement in Buchanan and Badham (2008, p. 6) referring to Frost and Egri (1991) argument that *"the interplay of power and politics at individual, intraorganizational, interorganizational, and social levels determines the success or failure of proposed innovations."* Therefore, interorganizational eHealth efforts should take this into account by including stakeholders that regulate this at the different levels.

Based on these findings, I recommend incorporating governance into the BM process in interorganizational eHealth efforts. In this thesis, I suggest extending the BMM in interorganizational eHealth efforts, by including a new, separate stage. Establishing governance should be agreed upon after benefit dependencies have been identified, such as benefits owners and change owners (e.g., after BMM stage two). Next, the defined governance structure should then be used as a "hub" for the remaining stages of the BM process. Instead of implementing a separate stage into the BMM, the aspect of governance could also be introduced as an extra layer for the whole BM process, and function more as a dynamic way of managing the BM process in such initiatives than the structured way illustrated in Figure 6-2.

Summary
Governance of the BM process at multiple organizational levels is lacking both in the BM literature and in eHealth practice. Circumstances, context, and organizations at multiple levels are known to influence readiness and outcomes (Askedal, 2019; Lake et al., 2017; Lennon et al., 2017). However, stakeholders regulating essential issues to realize benefits at these levels are not governed

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appropriately. The governance of multiple and heterogenous actors challenges BM in interorganizational eHealth efforts (Askedal et al., 2019), and is thus either not covered in existing BM literature (Ward & Daniel, 2012) or only briefly mentioned in related research as an emergent theme (Doherty, 2014; Doherty et al., 2012; Eden et al., 2018). On this basis, I propose that organizations establish appropriate governance for BM at different levels in interorganizational eHealth efforts. The evidence supports incorporating governance as a separate stage in the BMM for interorganizational eHealth efforts (see Figure 6-2) and using this structure as a hub for BM in such contexts.

7.2 Conceptual contributions

This thesis makes three main contributions to the conceptual foundation of the BM literature. First, the term BR was defined in an attempt to address the current conflation of the BM and BR concepts. Second, it provided an enhanced model for BM in complex eHealth efforts (Figure 7-1). Third, three propositions were defined that can be used to inform future BM studies and guide empirical work (Butler, Bateman, Gray & Diamant, 2014).

7.2.1 Clarifying the distinction between BR and BM

Prior research includes a myriad of terms and definitions used within the BR and BM literature. The concepts are not identical but have been conflated (see Section 2.2.1). The definition of BM by Ward et al. (1996, p. 214) is most commonly used (Waring et al., 2018), which defines BM as *"the process of organizing and managing such that the potential benefits arising from the use of IS/IT are actual realized."*

This conceptual confusion challenges researchers, since it is difficult to specify what conceptual foundation is used in research. To distinguish the two concepts, a definition for BR was developed, inspired by selected research (Ashurst, 2012; Ashurst et al., 2008; Jenner, 2011; Peppard & Ward, 2004; Remenyi et al., 2007; Ward et al., 1996). BR of IS investments *is when organizational value is generated from the use of IS/IT through achieving changes initiated by stakeholders.*

BR generates organizational value and is dependent on stakeholders initiating change. BM is the driving mechanism for managing stakeholders and change processes required for generating organizational value (BR). Hence, the terms are

related but not the same, and should not be used interchangeably. By improving BM approaches, BR will potentially increase.

7.2.2 An enhanced model for BM in complex eHealth efforts

Based on findings from the five papers (Figure 6-2), an enhanced and extended model of the BM process for complex eHealth efforts was developed (Figure 7-1). The revised model incorporates the BM context, levels of complexity (suiting both organizational and interorganizational initiatives), and the critical aspects of learning and governance. Each of the incorporated elements is recommended to improve BM, and hence increase BR. The solid lines in the model (related to BM context, level of complexity, learning and governance) illustrate recommendations, as these were the focus for data collection in Cases 1 and 2. The dotted lines illustrates suggestions since this part of the BMM has not been studied.
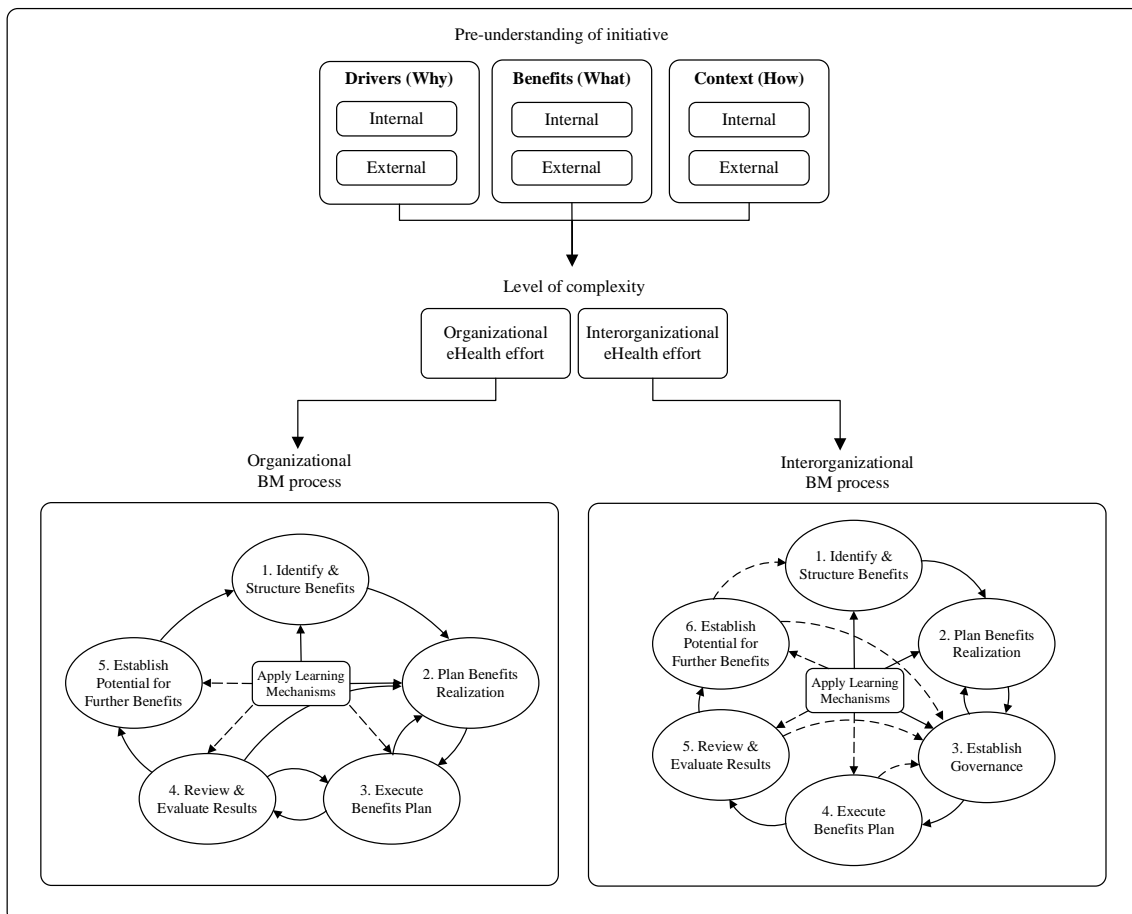

Figure 7-1: An enhanced model for BM in complex eHealth efforts

Pre-understanding of initiative

Ward and Daniel emphasized the importance of understanding the strategic context of the initiative before entering the BMM (Ward & Daniel, 2006). However, the BM context is not included as a pre-stage in the existing BMM, only illustrated separately in a book published 20 years ago (Ward & Peppard, 2002). The absence of this pre-understanding in the BMM may lead to ignorance of its importance in practice. As a reminder and for the purpose of identifying important knowledge that may affect the BM process regarding scope of resources needed to realize benefits, the BM context named pre-understanding of initiative, has been integrated into the model (Figure 7-1).

This study also found that the BM context expands when organizations collaborate to realize common benefits (Askedal, 2019). Therefore, the BM context (Figure 2-2) illustrated by Ward and Peppard (2002) was refined to incorporate these findings and added to the BMM. External and internal drivers are the same as illustrated in Ward and Peppard (2002). Benefits types were not specified in the previous BM context model, which was limited to the organizational context. In Figure 7-1, benefits are distinguished as internal or external, where external benefits can be identified as interorganizational or societal benefits. The scope and resources needed for the BM processes may be affected by the types of expected benefits, since benefit owners can represent different levels of organizations. The context is also distinguished into internal and external context, where external context is the interorganizational and/or societal context. Based on enabling changes required to realize intended benefits, change owners at multiple levels of organizations may influence the outcome of the given initiative and affect the scope of the BM process.

Level of complexity

Based on the pre-understanding of the initiative, the level of complexity for the given ICT initiative can be identified. The BM process can either be facilitated as an organizational BM process or an interorganizational BM process. The existing BM literature has been criticized as inadequate in interorganizational initiatives (Flak et al., 2015). Figure 7-1 enhances the BMM to incorporate both organizational and interorganizational BM processes.

Apply learning mechanisms

Cases 1 and 2 (Papers 2-5), in addition to reviewing relevant literature (Paper 1), revealed that the aspect of learning from the BM process itself was absent both in practice and in the BM literature. Since the data were collected in the early stages of the two initiatives, the contribution is primarily in stages one and two of the BMM. This is also where the suggestions for improvement are primarily targeted. The aspect of learning in these two stages has been lacking in BM literature from its early beginning, even though the research stream is firmly rooted in TQM principles, such as continuous improvement and learning.

The aspect of learning is mentioned in stage four. I argue that this is too late if the purpose is to improve the BM process itself. Further, the issue of learning related to the BM process is not clearly explained in the BM literature and non-existent in the BMM. This may be a reason for its absence in practical frameworks. Since the two first stages in BMM define the BM foundation, knowledge and experiences from this phase may be lost if it is not immediately specified. Therefore, I suggest that mechanisms for learning should be incorporated in each of the BMM stages. Further, if there are no mechanisms for collecting individual and collective experiences from these stages, it should not be surprising that there is limited research stemming from the BM in practice, and that problems are not resolved but rather repeated.

Individual and collective experiences from the BM process itself should also be specified and managed at multiple levels of organizations in interorganizational eHealth efforts (organizational, interorganizational, societal). Further, learning outcomes specified at the different levels should then be coordinated and governed by agreeing on collective improvement of future BM processes in similar initiatives.

Establish governance

Societal changes are causing increased collaboration among organizations to reach common and societal benefits. The BM literature does not include frameworks or guidelines for incorporating interorganizational initiatives, but rather suggests avoiding complex issues. This is inadequate in a constantly changing society. The studies addressing RQ2 identified that multiple levels of organizations (organizational, interorganizational, societal) affect the BM process and its

outcome. However, governing influential stakeholders at the different levels was challenging in my case, and the BM literature offered limited advice on how to handle this. The governance structures are an emerging theme for BM processes (Doherty et al., 2012; Eden et al., 2018). The contributions from this thesis emphasize the importance of the governance aspect by suggesting that governance should be established as a separate stage in the BMM for interorganizational eHealth efforts. This activity should be defined after benefit dependencies are identified, (e.g., between benefit owners and change owners). Further, this structure should be used as a basis for future BM activities, such as adjusting benefits plans and rescoping initiatives, which may affect stakeholders at different levels of the organizations. Establishing governance is a mechanism for improving the BM process within and across organizations to realize societal benefits.

7.2.3 Three propositions for future BM studies

Based on the new model for BM in complex eHealth efforts, three propositions are offered to inform future BM studies and guide empirical work; two of which concern the aspect of learning from the BM process itself. Since the level of complexity has been identified to affects levels of organizations that are involved in the BM process, one proposition targets organizational eHealth efforts, and one targets interorganizational eHealth efforts. The third proposition involves governance for the BM process in interorganizational eHealth efforts.

BMM for organizational eHealth efforts

As illustrated in Figure 7-2 below, learning mechanisms are incorporated into the BMM for organizational eHealth efforts. Since only the first two BMM stages were investigated, the line from "apply learning mechanisms" to stage 1 and 2 are solid. However, since a learning focus is important through all BMM stages, the lines are dotted from "apply learning mechanisms" to stage 3 through 5. The following proposition was developed to address the issue of learning in organizational eHealth efforts.

Proposition 1: Applying mechanisms for learning in all stages of the BMM will improve the overall outcome of the BM process in organizational eHealth efforts.
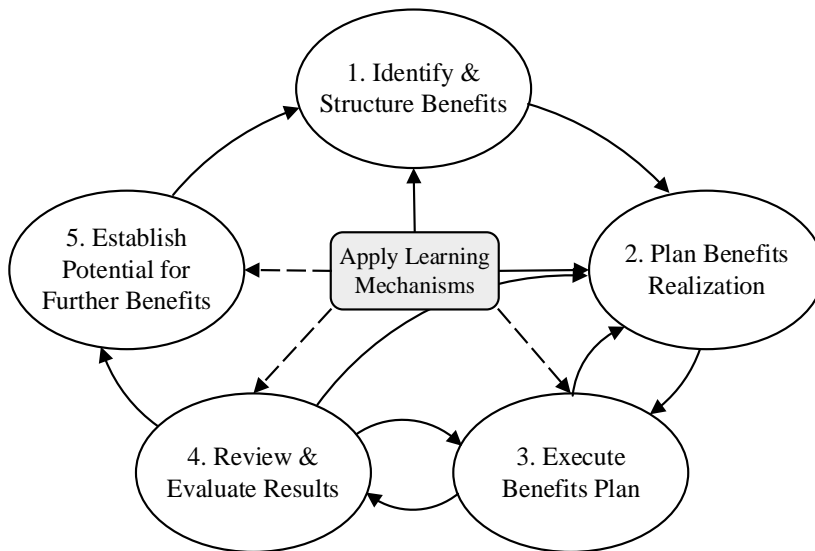
Figure 7-2: BMM for organizational eHealth efforts

BMM for interorganizational eHealth efforts

As illustrated in Figure 7-3 below, and building on the findings from an organizational eHealth initiative (Askedal et al., 2017b), learning mechanisms are also incorporated into the interorganizational BMM. The logic behind solid and dotted lines are the same as explained above. Since the interorganizational BM context includes multiple organization levels, the aspect of learning should also be incorporated at the affected levels. The following proposition has been developed to address the issue of learning in interorganizational eHealth efforts:

Proposition 2: Applying mechanisms for learning in all stages of the BMM at organizational, interorganizational, and societal levels will improve the overall outcome of the BM process in interorganizational eHealth efforts.

Based on the findings, *establish governance* has been incorporated as a separate stage in the BMM for interorganizational eHealth efforts (Figure 7-3). The logic behind solid and dotted lines in the model are the same as explained above. The previous BMM feedback-loop from stages 4 and 5 to stage 2 has been changed to point to stage 3 because the applied governance is a hub for all activities in the BM process. In addition, there is feedback from stage 6 to stage 3, since collaborative partners should identify new opportunities, changes, and enabling IS/IT through established governance structures. The link between stage 6 and stage 1 was also changed to dotted, since it is not obvious whether an interorganizational BM process will continue into a new interorganizational initiative with the same collaborative partners. This may depend on overall BM process outcomes. The

following proposition was developed to address the issue of governance in interorganizational eHealth efforts:

Proposition 3: Establishing governance for BM in stage three of the BMM by including organizational, interorganizational, and societal levels, will improve the overall outcome of the BM process in interorganizational eHealth efforts.
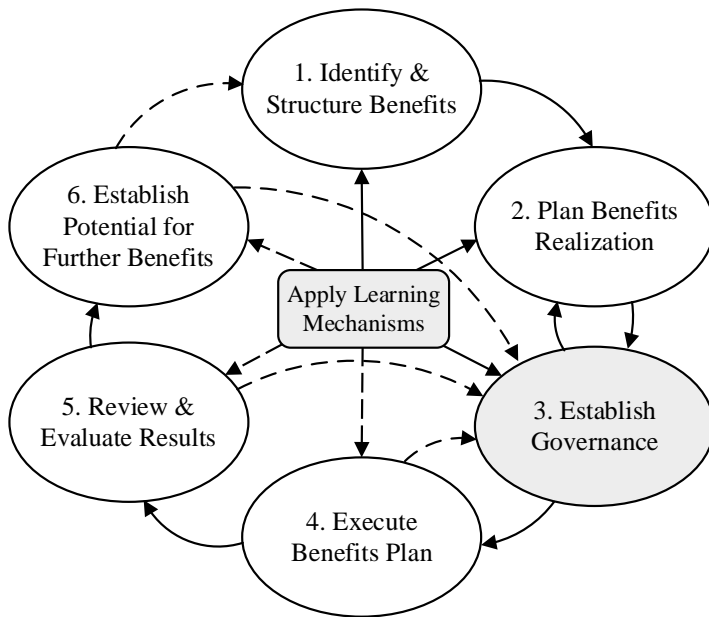

Figure 7-3: BMM for interorganizational eHealth efforts

7.3 Practical contributions

Based on the five research publications underlying this dissertation, there are two main contributions to practice. The goal for these contributions is to "*help managers use the practical findings to improve upon the value they derive from IT*" (Kohli & Grover, 2008, p. 25). However, this statement should not be limited to organizational boundaries, but rather interpreted within a societal perspective.

More specifically, practical contributions are suggested based on the three propositions provided as conceptual contributions to the BM literature (Section 7.2.3), by translating the propositions into recommendations that practice can "*readily implement to solve the problem, envision a solution, or move their thinking forward*" (Piccoli, 2019, p. iii).

7.3.1 A checklist to stimulate learning

Building on Piccoli (2019) view of actionable approaches for practice, such as defining specific questions, the learning propositions have been translated by

developing a checklist consisting of six questions aimed at improved learning at different levels from the BM process itself (Figure 7-4). By applying mechanisms for learning into the BMM stages as suggested in Figure 7-1, the overall outcome of the BM process will likely be improved.

Checklist to stimulate learning from the BM process:

1. Is there available knowledge from the BM process in similar initiatives that can be used as input when establishing the foundation for BM?

2. Are individual experiences being collected from involved stakeholders?

3. Are the collected experiences being processed?

4. Is there anything to learn from the processed experiences?

5. Will the learning change future BM processes?

6. Are the experiences being made available to others?

Figure 7-4: Checklist to stimulate learning from the BM process

The questions posed in Figure 7-4 are formulated as yes and no questions to provide a general and easy list that practices can customize to their organizational context. The focus is to trigger mechanisms for learning from the BM process itself. Further, experiences should be collected from involved stakeholders. Ward and Daniel (2006) suggest benefit owners and change owners as examples for stakeholders that should be included into stage four of the BMM for reviewing and evaluate results. These stakeholders are also seen as relevant when focusing on learning from the BM process itself in earlier BMM stages. Techniques for how experiences should be collected and processed may vary depending on contextual factors. However, a discussion about learning outcomes and impact should be made with stakeholders governing the BM process in addition to other relevant stakeholders, such as benefit owners and change owners. The last question on the checklist is a reminder to share experiences with others, in the form of research papers or summary reports. Regardless of format, shared experiences can function as input to Question 1 in similar eHealth initiatives.

7.3.2 Governance in interorganizational BM process

Translating the proposition about governance of multiple and heterogenous actors in the interorganizational BM process affords some suggestions related to governance of such efforts. The suggestions are based on the findings from this thesis (including multiple levels of organizations) and existing BM literature (portfolio management). To succeed in practice, there is a need to define responsible roles for managing the portfolio including BM at different levels (organizational, interorganizational, societal). Those who holds these roles should collaborate across the levels to coordinate cross-organizational dependencies that may impact the interorganizational BM process itself in addition to the final outcome of realizing societal benefits.

In addition to governing the BM process across the affected levels, individual and collective experiences from the BM process itself should be governed accordingly. The six questions suggested in Figure 7-4 may be incorporated into the portfolio management team at the different levels (organizational, interorganizational and societal) and governed across the levels for improving future interorganizational eHealth efforts. A defined role, for instance a knowledge officer as suggested in Wong and Davison (2018), could be responsible for learning governance from the BM process itself, and together with the portfolio management team at the affected organizational levels, agree upon potential changes in future BM processes for improvement purposes.

8 Conclusion

This chapter summarizes the study as a whole, including motivation, objectives, main results, and implications. Second, limitations are discussed followed by suggestions for opportunities and possible directions for future research.

8.1 Summary of findings

The motivation for exploring the phenomenon of BM in complex eHealth efforts through a doctoral study derived from challenging issues in practice (problem-driven study), that of demographic changes that will affect the way public healthcare services are provided in the future. The problem-driven motivation is followed by the limitations in relevant literature regarding an obvious need for tightening knowledge gaps, providing an excellent opportunity to contribute to practice and research through a doctoral study. Based on these two motivations, the overall study objective was to explore and understand the phenomenon of BM in complex eHealth efforts. To enable contribution to the phenomenon, two RQs were investigated: 1) What benefits are realized in complex eHealth efforts? 2) Why is it challenging to realize benefits in complex eHealth efforts?

The philosophical grounding for this study was constructivism as ontological belief and interpretivism as epistemological assumption. RQ1 was investigated by reviewing prior research, and a multiple case study approach was used to address RQ2. In that respect, two Norwegian eHealth efforts were studied (single and multiple organizations), where empirical data were collected in early stages of these initiatives, affecting the outcomes.

As answer to RQ1, the findings from the literature review suggest that the level of known and documented effects are substantially greater than what has been suggested in the literature. However, the results indicate that several effects, both positive (e.g., improved work processes) and negative (e.g., poor patient engagement) have been reported over several years.

As answer to RQ2, the findings reveal that lack of learning and governance challenged BM in complex eHealth efforts. First, when mechanisms for learning are not integrated in the BM process, repetition of flawed practice may continue. Additionally, research reporting experiences from the BM process will continue to remain scarce if learning mechanisms are absent in BM practices.

Next, the BM context was expanded in the interorganizational eHealth initiative (e.g., by introducing multiple levels of organizations). This revealed that the aspect of governance was absent in BM practices. Therefore, my findings suggest that existing BM practice need revision to cater for the level of complexity in interorganizational eHealth efforts. Through an analysis of the BM context, the level of complexity will be uncovered. This pre-understanding of initiative may assist to establish appropriate governance among affected levels of organizations (organizational, interorganizational, societal) in interorganizational eHealth efforts.

Based on this study, three main contributions to the conceptual foundation of the BM literature were provided. First, the concept of BR was defined for the purpose of clarifying the existing conflation of the BR and BM concepts. This enables researchers to specify their conceptual foundation. Second, an enhanced model of BM in complex eHealth efforts was developed to improve BM and increase the BR in such initiatives. The model incorporates the BM context, level of complexity, and the critical aspects of learning and governance. Third, three propositions concerning the aspects of learning and governance were developed based on the integrated BMM for complex eHealth efforts. The propositions can be used to inform future BM studies and guide empirical work.

Two main contributions to practice are suggested by translating the three propositions concerning the aspects of learning and governance mentioned above. First, a checklist comprising six questions was developed to trigger mechanisms for learning at different levels from the BM process itself. Second, suggestions related to governance of the BM process in interorganizational eHealth efforts was suggested. Since learning from the BM process is important at multiple organizational levels, governance of experiences and knowledge at the different levels is also important. For instance, a defined role, possible in the portfolio management team, could be specified and operate across levels for absorbing own and others' learning in addition to distributing knowledge to others.

8.2 Limitations and reflections

This doctoral dissertation, like any academic study, has limitations. Validity issues related to the applied research strategies have been outlined in Sections 3.1.4 and 4.2.3 and should be considered when findings from this study are interpreted.

However, some overall limitations will be elaborated further as they may provide excellent areas for future research.

The main objective of the literature review was to reveal experienced effects in eHealth efforts in primary care. The scope of searching for literature was limited to primary care but could potentially have included specialist healthcare services as well. However, the focus on primary healthcare was decided based on the knowledge about consequences of expected demographic changes that more healthcare services must be delivered by primary healthcare providers in the future. Further, eHealth initiatives where primary and specialist healthcare services collaborated were included. Still, the findings of the literature review do not represent experienced effects from eHealth efforts in public healthcare services as a whole. If the scope of the included context were expanded, different results may have been revealed in RQ1. Recently, Eden et al. (2018) reviewed effects of eHealth in hospitals reporting coincident outcomes as the reported effects of eHealth in primary care. The outcomes from the two studies could potentially have been compiled to provide a common knowledge base covering both primary and specialist healthcare services, since collaboration across organizational levels is expected to increase in the future. Such knowledge can provide insight into different or common expectations and experiences across stakeholders, which may be relevant for future management of organizational collaboration and initiatives. The literature review does only report findings related to experienced effects, which at first glance may be relevant and enlightening. However, seeing this outcome in the light of the contribution to RQ2 (emphasizing the importance of learning from the BM process itself), the analysis could also have included the process concept in the matrix. Hence, the findings would have been even more informative since issues affecting experienced effects could have been used to expand the knowledge base in similar initiatives practice. Establishing such an knowledge base is seen as a relevant opportunity for future research, since knowledge and experiences function as a foundation for BM practices, which in turn affects BM competence and expands BM capability (Ashurst et al., 2008).

The purpose of investigating Cases 1 and 2 was to gain an in-depth understanding of why BM is challenging in complex eHealth efforts. The data that formed the contributions was collected in the early stages of the two initiatives. In BM literature, this phase of the initiative can be related to the two first stages essential

for establishing a solid BM foundation. In that respect, the outcome from the two cases revealed aspects of learning and governance to be challenging but important for BM in complex eHealth initiatives. However, the findings have not been implemented into the BM process and studied to determine whether they actually improve BM outcomes in general. This is a limitation of the dissertation since the contribution may be interpreted as an absolute for how BM literature should be improved. Rather, the contributions suggest aspects where the BM literature and practice can be improved in such initiatives that may influence the overall BM outcome. An excellent opportunity for further studies is to apply the suggested theoretical and practical contributions to the BM process in complex eHealth efforts and report both learning from the BM process itself and the overall outcome.

While the two eHealth efforts were studied, the environment and context evolved. For instance, interactions among stakeholders may have changed, circumstances such as technological development and maturity may have changed, and societal factors such as legislation and politics may have changed. Based on this, some reflections regarding the contributions can be made. Distance between the time of data collection and the time of the events under study may influence the understanding of what happened. However, when discussing the findings against the BM literature, the aspects of learning and governance are interpreted to be of importance for BM in an increasingly evolving society. Thus, as the traditional perspective of organizations is challenged by societal changes (Majchrzak et al., 2016), the original mindset of BM may also be challenged because it is closely related to the dimensions of organizations and organizational goals. In that respect, studying the evolvement of BM in eHealth efforts aimed for societal benefits could be another area for future research, which is relevant in light of the statement proposed by Majchrzak et al. (2016).

Since the BM context was identified to expand in interorganizational eHealth efforts that aimed to realize societal benefits, the term of BR can also be discussed. The definition of BR involves generating organizational value. Based on empirical findings in interorganizational eHealth initiatives, it is natural to draw attention to interorganizational and societal value rather than organizational value, since external drivers and societal benefits seem to be the focus in such initiatives. Hence, the term of BR in combination with the generation of societal value does

not seems appropriate in that respect. Rather, the terms Value Realization (VR) and Value Management (VM) could have been used in interorganizational and large-scale (national) initiatives instead of referring to BR and BM. Conceptualizing VR and VM in interorganizational and national large-scale initiatives is another opportunity for future research.

This study identified the societal level and related stakeholders as important for BM in interorganizational eHealth efforts. Unfortunately, this perspective was not covered in the data collection or analysis and considered as a limitation. If data from societal stakeholders were collected, the outcome may have been different, or at least covered all three organizational levels of the BM context. This can be an excellent opportunity for future research to include all stakeholder levels for a holistic view of BM in interorganizational eHealth efforts.

8.3 Future research

Based on the contributions and the limitations of this doctoral dissertation, opportunities for future research were identified and can be seen as a research agenda to address current shortcomings. The research agenda suggests three distinct directions: methodology, theory, and topic. The opportunities suggested within each of the directions could either be investigated independently or in combination. All can contribute to optimize the fit between technical and social components in an evolving society.

Methodology

Focusing on opportunities for future research in the light of methodology combined with the proposed contributions, several ways of framing future studies are suggested. One is to apply the suggested propositions of learning and governance into the BM process in future complex eHealth efforts and use action design research (ADR) (Sein, Henfridsson, Purao, Rossi & Lindgren, 2011) to explore the implications of the suggested BM improvement. In that respect, data should be collected from all stages of the BMM to gain in-depth knowledge of implications for the BM process itself and for realizing benefits in general. Additionally, by using ADR, which is a proactive approach (Cole, Purao, Rossi & Sein, 2005), artifacts could be designed, implemented, and evaluated as part of the initiative. This outcome may be of high value for organizations and could facilitate cooperation between academia and practice as well. ADR has been applied in IS

studies within a healthcare context (Sherer, 2014), and is appropriate in that respect.

Another research approach that could be used for validating the suggested propositions is the comparative method, using qualitative comparative analysis (Ragin, 2014). This approach is useful for assessing *"new ideas, propositions, or conjectures formulated by researcher and not embodied in an existing theory"* (Marx, Rihoux & Ragin, 2014, p. 116). Using Boolean algebra (true/false), a comparative analysis could address whether conditions are present/absent when a certain outcome is obtained. Different cases can be compared for identifying patterns where the complexity is simplified with a methodical approach (Ragin, 2014). While a relatively new method in IS research, some good exemplars of the technique are available (Fedorowicz, Sawyer & Tomasino, 2018; Lapointe & Rivard, 2005).

Theory

Future research could use other theories to further explore and understand the phenomenon of BM in complex eHealth efforts. First, the perspectives of governance networks and meta-governance (Sørensen & Torfing, 2007) stemming from research on interorganizational decision making and implementation could be valuable in that respect. The perspective of governance networks is part of the governing networks identified in empirical research from political science, organizational science, and public administration (Klijn, 2008). The two perspectives concern among others; the structure and power of network actors, types of interactions, context, environmental premise, contribution to public purpose, and coordination of actors in networks (Sørensen & Torfing, 2007, 2017), and could shed light on governance mechanisms among organizations aiming for societal benefits.

Another theory valuable for improving the BM literature to incorporate interorganizational eHealth efforts aimed at realizing societal benefits, is multilevel theory (Klein, Dansereau & Hall, 1994). The theory assists in multilevel thinking as applied to organizational phenomena (e.g., organizational learning) by describing multilevel theoretical processes and providing principles for building multilevel organizational theory (Kozlowski & Klein, 2000). The provided principles corroborate this study's findings on how multiple levels impact process

outcomes, and may be valuable for improving the BM literature, e.g., *"virtually all organizational phenomena are embedded in a higher-level context, which often has either direct or moderating effects on lower-level processes and outcomes"* (Kozlowski & Klein, 2000, p. 10).

To develop solid constructs when seeking to establish theoretical models (e.g., BMM for interorganizational ICT efforts) in addition to minimizing confusion, biases, and errors, the essence of multilevel theory is to ensure that the theoretical level of constructs, measurement, and analysis are aligned (Kozlowski & Klein, 2000; Mathieu & Chen, 2011). While multilevel theory presents longstanding concepts such as individual-level constructs and unit-level constructs (Kozlowski & Klein, 2000), new ways of theorizing levels in organizational and societal settings have emerged, since *"modern-day organizational entities are rarely neatly nested, incorporating dynamic elements that are not uniform across levels of analysis"* (Burton-Jones & Volkoff, 2017; Mathieu & Chen, 2011, p. 621). For instance, cross-disciplinary multilevel theorizing is useful when extending well established theories from one level to unexplored levels (Mathieu & Chen, 2011). This may be an interesting avenue for research as theorizing around the BMM matures.

Third, the theory of organizational learning (Argyris & Schön, 1996) and perspectives of knowledge creation (Nonaka et al., 2000), knowledge management (Alavi & Leidner, 2001) and knowledge sharing (e.g., Wong & Davison, 2018) can be appropriate for exploring the aspect of learning from the BM process itself. Further, as multiple of organizational levels was identified to affect the BM outcome in interorganizational eHealth efforts, these levels should also be incorporated into the learning aspect to improve the BM literature. For instance, Hartley and Benington (2006) work on knowledge sharing through interorganizational networks may be relevant in that respect.

Topic

Researchers should be aware of the expanded scope of BM context in interorganizational eHealth efforts, which was identified as essential for realizing societal benefits. However, the expanded understanding of the phenomena should be developed in much more detail. In particular, governance structures and mechanisms to stimulate societal benefits through innovative ICT initiatives needs

in-depth investigation. Increasing prevalence of interorganizational eHealth efforts suggest a need for rethinking BM in light of the increased complexity and need for governance.

Further, the repetition of flawed practice in eHealth initiatives indicates a lack of mechanisms for learning from the BM process itself. To increase the focus on learning throughout the BM process, especially in the first two BMM stages where the foundation for the rest of the BM process is established, more knowledge is needed to improve BM literature and practice. Examining structures and mechanisms that coordinate and govern learning across appropriate levels to improve future BM processes is a highly relevant area for future research.

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Appendices

Appendix A. Interview guide Case 1

1. Introduction
- Present myself
- Explain the background of the study and purpose for the interview

2. Informant background
- Name, profession, role

3. Experiences with current services and thoughts about future services
- Can you give a brief summary of a typical day at work?
  - Collaboration partners/stakeholders/
- How do you experience this way of working?
  - Pros and cons
- In relation to today's work situation, can something be done differently to improve the workday for healthcare professionals to address future challenges and opportunities?
  - Prerequisites
- How do you think patients/relatives experience today's healthcare services?
  - Pros and cons
- In relation to today's work situation, can something be done differently to improve the service for patients/relatives to address future challenges and opportunities?
  - Prerequisites
- In relation to today's work situation, can something be done differently so the organization can meet future challenges and opportunities?
  - Prerequisites

4. Experience with technology use in current healthcare service and thoughts about technology in future service provision
- To what extent is technology used in current service provision?
  - Emergency phone, alarms, sensors etc.
- What experiences do you have of the technologies you use in service provision?
  - Positive/negative
- How do you envision future service provision in relation to technology?

o Expectation to what technology can do

5. Establishing Response Central

Questions to all informants (regardless of role)

- If you could decide, what would be an optimal organizational model for receiving and responding to safety alarms?
  - o Service design/patient pathway/patient group/service collaboration
- What competence is required for staff working in response central for it to function optimally and provide good services?
  - o E.g., health/technical/communication/administrative/others?
- What information and technology support are required at the response center for it to function optimally and provide good services?
  - o Electronic health record/decision support/others?
- How do you think a response central will impact your everyday work?
  - o Pros and cons
- How do you think establishing a response central will affect patients/relatives?
  - o Pros and cons
- How do you think establishing a response central will affect the organization?
  - o Pros and cons

Questions to advisors/service managers/top managers

- What is important for you to have to safeguard measurement data and statistics?
- Do you have any thoughts about the legal responsibilities that may accompany establishing a response central?
- Do you have any thoughts about how services provided through the response central should be funded?
  - o E.g., internally/from end-users/from other municipalities

6. Closure

- How do you experience getting involved in an early phase of the initiative?
- Do you have anything to add?
- Thank you for participating!

Appendix B. Interview guide Case 2

1. Introduction
- Present myself
- Explain the background of the study and purpose for the interview
- Informant background (name, profession, role in the TIP/organization)

2. Current and future healthcare services
- How do you experience work in/with public healthcare services today?
- What do you think about future healthcare services? How do they look? Must something be done differently compared to current service provisions? What?
- What thoughts do you have about implementing technology in healthcare services?
- If I say the word "telemedicine," what is that to you?
- Do you think telemedical services can be useful for providing public healthcare services in the future?
    - If yes; in what way?
    - If yes; which patients do you think can benefit from telemedical services? How does the given patient group receive healthcare services today?

3. Project TIP
- Have you heard about the TIP?
    - If yes; what thoughts do have about the project?
- What do you think is the motivation/driver for your organization to be involved in (investing) in the TIP?
- What results do you think are possible to achieve with telemedicine service provision in the TIP? What do you expect and what is the goal (at various levels e.g., patients, healthcare professionals, organization, society)?
- Who do you think is responsible for achieving these goals in the TIP?
- What is needed for the TIP to be a success?
- What might run the TIP into the ditch?
- What experiences do you have with the TIP so far?
    - Process, collaboration, organization
    - Positive/negative/challenges

- Is there anything that is hindering the TIP today from achieving good results? Are there some issues that should receive increased focus?

4. Changes related to telemedical services in the TIP

- Will participation in the TIP lead to changes in how you provide work assignments in the short and long term?
  - If yes; what do you think about these changes? What attitude do you have regarding the changes? If positive, what do you think can be the cause, and are there important elements that need to be present in the future for maintaining motivation for change? If negative, what is needed for this to turn into something positive?
- Who do you think is responsible for implementing the changes?

5. Closure

- Experiences of being interviewed
- Do you have anything to add?
- Thank you for participating!

Appendix C. Research publications

#	Research publications
1	Askedal, K., Flak, L. S., & Abildsnes, E. (2017). *Reviewing effects of ICT in primary healthcare services: A public value perspective.* Proceedings of the 23rd Americas Conference on Information Systems, Boston, MA.
2	Askedal, K., & Skiftenes Flak, L. (2017). *Stakeholder contradictions in early stages of eHealth efforts.* Proceedings of the 50th Hawaii International Conference on System Sciences, Big Island, HI.
3	Askedal, K., Flak, L. S., Solli-Sæther, H., & Straub, D. (2017). *Organizational learning to leverage benefits realization management; Evidence from a municipal eHealth effort.* Proceedings of the International Conference on Electronic Government, St. Petersburg, Russia.
4	Askedal, K. (2019). *Understanding the complexity of benefits management in an interorganizational eHealth effort.* Proceedings of the 52nd Hawaii International Conference on System Sciences, Maui, HI.
5	Askedal, K., Flak, L. S., & Aanestad, M. (2019). Five challenges for benefits management in complex digitalisation efforts- and a research agenda to address current shortcomings. *Electronic Journal of eGovernment.*

Reviewing Effects of ICT in Primary Healthcare Services: A Public Value Perspective

Full Paper

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Abstract

Use of information and communication technology (ICT) in healthcare has increased dramatically over the past decades. A growing body of research illustrates both the practical and academic interest in the area. However, despite the rather massive focus, the research can be seen as a series of disconnected studies with only a handful of studies attempting to consolidate the field. Further, there is little agreement on how technology impacts sector values and of more general effects of technology in primary healthcare. To address this gap, we reviewed a carefully selected sample of existing research to investigate effects of ICT in primary healthcare and the impact ICT seem to have on sector values. Our findings include a comprehensive overview of effects of previous research and contradict much of existing literature in showing that a substantial amount of effects has actually been documented.

Keywords

Primary healthcare, effects, public values, telemedicine, telecare, telehealth.

Introduction

In both developed and developing countries, the proportion of people aged over 60 years is growing faster than any other age group. The global population of 60 years or older has doubled since 1980, and is expected to reach 2 billion by 2050 (World Health Organization 2014). This may be viewed as an indication of success of public health policies and socioeconomic development, but also as a major challenge to the capacity of healthcare systems, since the frequency of diseases and complexity of disease management increases with age (Barnett et al. 2012).

Responding to this challenge, the European Commission has included *health, demographic change and wellbeing* in the European Union framework for research and innovation, Horizon 2020 (European Commission 2014). Healthcare providers are seeking ways to support more people at home, and advances in technology have led to development of new devices that are integrated into healthcare to support people to cope with chronic diseases (Martin et al. 2008). As with many new technologies, the adoption of Information and Communication Technology (ICT) in healthcare often occurs without comprehensive evaluation of the health impact or a true understanding of the added value of ICT to health services (World Health Organization 2005).

Martin et al. (2008) aimed to determine what effect smart home technologies have on people, but found no studies testing their effectiveness and concluded that the effects of smart technologies to support people in their homes are not known. A focus on cost-effectiveness is important for adoption of new

technology in healthcare, but despite all enthusiasm, a synthesis concluded that almost nothing is known about the cost-effectiveness of telemedicine in chronic disease management, and that the evidence of the value is weak and contradictory (Wootton 2012). The lack of documentation regarding benefits and effects from use of technology should be regarded as a moral problem, as it is rapidly adopted into many countries' healthcare services (Hofmann 2013).

The organization of healthcare systems has implications for implementation and utilization of new technology. Even if projects are reported as being successful, implementations may be obstructed by incentive systems that favors old working methods and work processes (Lanestedt and Bygstad 2009). Thus, factors that characterize a successful ICT project have changed from looking at technical solutions and functionalities, into how the project could fit in workflows and how the system could be used. ICT solutions should be closely aligned with workflow and organization. There can be substantial potential benefits, but also considerable costs associated with ICT-investments in healthcare. Although authorities have been hesitant in making benefits realization approaches a requirement, they are eager to better understand the potential benefits and how to produce such benefits (Flak 2012).

As a consequence of expected demographical changes, more healthcare services must be delivered by primary healthcare providers in the patient's home. In summary, there is a need for research to document if or how ICT contribute to better healthcare, and how healthcare providers can work to realize the full potential of the technology. Furthermore, there is a need for an improved understanding of the costs and side effects that may be experienced from implementation of such technologies.

The objectives of this study are therefor to:

- provide an overview of the effects of introducing ICT in primary healthcare
- describe to what degree the reported effects of ICT in primary healthcare are documented

Background and Theory

Theory is used for two purposes in our study. First, we introduce the field of ICT in healthcare as context. Second, literature on public values is presented, and we describe how this is used as an analytic lens in our literature study.

ICT in Healthcare

In research, there is a conceptual confusion regarding the terminology related to ICT and healthcare (Martin et al. 2008). An analysis of the concept "telecare" reveals that terms like telemedicine, telecare and telehealth are used interchangeably (Solli et al. 2012).

Various definitions of the above-mentioned concepts exist (Grigsby 2002; Solli et al. 2012; Wootton 2012). With regards to trialing new services and technologies, England and the UK in general are said to have taken the lead among European countries (Clark and Goodwin 2010). The Department of health in the UK (2009, p. 5-6) use the following definitions for telecare and telehealth:

- Telecare: Services that *"uses' a combination of alarms, sensors and other equipment to help people live independently. This is done by monitoring activity changes over time and will raise a call for help in emergency situations, such as fall, fire or a flood".*
- Telehealth: Services that *"uses equipment to monitor people's health in their own home... (monitoring) vital signs such as blood pressure, blood oxygen levels or weight".*

Even though the term "telecare" is much used in practice, no MeSH-term has been established for use when searching online library databases. The term "telehealth" is included in the MeSH-term "telemedicine" (among other concepts like eHealth). In a bibliometric analysis (Fatehi and Wootton 2012) the trends in the use of the different terms; «telemedicine», «telehealth» or «eHealth» were examined. The term "telemedicine" was most common and referred to in documents from 126 countries.

The European Commission (2008, p. 3) use the following definition of telemedicine: *"Telemedicine is the provision of healthcare services, through use of ICT, in situations where the health professional and the patient (or two health professionals) are not in the same location. It involves secure transmission of*

medical data and information, through text, sound images or other forms needed for the prevention, diagnosis, treatment and follow-up of patients."

Given the varying use of terminology related to ICT in healthcare, we adopt the three different definitions to cover the broad area of the field.

A limited number of review articles focus on subsets of ICT in healthcare (e.g. (Martin et al. 2008; Wootton 2012)). However, we have not seen any study providing a comprehensive overview of effects of ICT in primary healthcare. Given the considerable focus on the theme and the existing body of research on the topic, we consider it timely to provide such an overview.

Public Values

Research from management studies and information systems has typically focused on organizational and financial impact from ICT. However, healthcare benefits include societal values such as quality of life and absence of disease, in addition to traditional benefits such as cost reductions and increased efficiency (Sherer 2014).

Implementation of ICT in the public sector is likely to have implications for public values. Different ICTs may impact different sets of values, in different ways (Bannister and Connolly 2014). Following Sherer´s (2014) argument of multiple values and diverse stakeholders, a public values framework is considered suitable for categorizing and analyzing effects of ICT in healthcare.

In literature, there is a lack of research focusing on both the subject of ICT and public sector values (Bannister and Connolly 2014), and value creation in the public sector (Pang et al. 2014). Defining value or performance in public sector and measuring "non-market" values such as democracy and transparency is suggested to be difficult (Pang et al. 2014).

For the purpose of studying effects on performance of ICT in public sector, little theory has been developed (Pang et al. 2014). There is a theoretical basis in the information system (IS) literature on IT business value built on e.g. the resource based view, but this does not fit the public sector very well (Bannister 2001; Pang et al. 2014). Public sector do not need to achieve competitive advantage, and it does not fit with the multi- dimensionality of values in public organizations (Pang et al. 2014).

Three concepts have emerged as key criteria in public sector for performance evaluation, and they are often called the three Es; efficiency, effectiveness and economy. When these criteria are combined optimally, it will deliver "value for money" (Bannister 2001). As earlier mentioned, in public sector there is a more diverse group of stakeholders (e. g., politicians, citizens, media) with diverse demands and interests than in private sector. "Value-based conflicts" can occur when the values governments work for, conflict each other. With limited resources, it is difficult to balance different interests often representing contradictory values (Pang et al. 2014).

A handful of frameworks for public values have emerged over the past years (e.g., Bannister and Connolly 2014; Codagnone et al. 2006). The framework from Rose et al. (2015) (Figure 1), offers a well-developed framework for understanding public values that we consider useful in addressing our research.

Figure 1. Rival value positions for eGovernment (Rose et al. 2015, p. 46)

For this review, the three value positions (administrative efficiency, service improvement and citizen engagement) and the belonging keywords are used as an analytic lens to investigate what values the literature of ICT in primary healthcare reports.

Research Approach

A literature review can enable theoretical progress and contribute to establishing firm foundations for an emerging field (Webster and Watson 2002). This fits well with the state of the eHealth area and our ambitions of establishing a foundation of possible effects from introducing ICT into primary healthcare services. In this study, we adopted the guidelines of Webster and Watson (2002) on how to carry out a literature review with the purpose of understanding and establishing a foundation of effects of ICT in primary healthcare services.

We searched two major library databases, Scopus and Ebsco Medline, as these cover a wide range of information systems and health ICT outlets, combining the following search phrases with no limitation regarding year of publication or outlet:

- Technology, using additional search phrase: Telemedicine OR Ambient assisted living OR Telecare
- Impact, using additional search phrase: Effects OR Evaluation
- Context, using additional search phrase: Primary healthcare OR Community health services

The search ended in February 2017 and resulted in 419 articles. There was some overlap between the two database searches. When duplicates were removed, the sample consisted of 284 unique articles.

One of the authors scanned the titles and abstracts once and divided the articles in three categories: relevant, irrelevant and unsure. The following inclusion criteria were applied: explicit technology focus, clearly stated effects and primary healthcare context. Papers only related to a hospital context were excluded. All three authors then discussed papers in the "unsure" and "irrelevant" categories, and ended up with 165 papers that met the inclusion criteria. Another 27 articles were excluded from the sample due to non-English or Scandinavian language (5), no mention of effects (10), technology not part of study (2), only focus on hospital (2), no mention of health (2), no full-text version available (1), or that articles for other reasons were difficult to map (5). This left 138 papers for analysis, published in 80 different outlets. In general, there were 1-3 papers meeting our criteria per outlet. Table 1 lists the three outlets with 8 or more papers in our sample.

Journal	Search field	N
Telemedicine and e-Health	Full text	19
Journal of Telemedicine and Telecare	Full text	14
Journal of Medical Internet Research	Full text	8

Table 1. Literature sample overview

Analysis was done in two iterations. First, we analyzed titles and abstracts to get an overview. We used two concepts from different strands of existing literature to guide our analysis. These concepts were: *technology* and *effects*. Table 2 provides the basis of our concept matrix, as suggested by Webster and Watson (2002).

Concepts	Reference to literature	Dimensions
Technology	Several studies (Martin et al. 2008; Solli et al. 2012)	Telecare Telehealth Telemedicine Other
Effects	Rival value positions for e-Government, Figure 1 (Rose et al. 2015)	Administrative efficiency Service improvement Citizen engagement Other

Table 2. Concepts and dimensions

Units (e.g. documented or expected effects) and impacts (e.g. positive or negative) were added to every dimension (e.g. administrative efficiency) of the concept *Effects*. The different units and impacts used in the analysis are illustrated in Table 4.

After the initial analysis, we analyzed the full-text of each article according to the same criteria and further developed our concept matrix. While the initial iteration of analysis provided a rich overview according to our concepts, the second round completed the picture as we discovered additional items for our concepts, and also revised some of the initial mapping.

Results

This section outlines the results from our analysis to address the objectives of the study:

- provide an overview of the effects of introducing ICT in primary healthcare
- describe to what degree the reported effects of ICT in primary healthcare is documented

The results are presented in Tables 3, 4 and 5. The findings are discussed in relation to the objectives in the next section.

Table 3 provides an overview of the number of papers containing the different dimensions of public values. Every dimension can potentially be found in every paper. Out of 138 papers, service improvement is the one of the public values with highest prevalence in our sample (121 papers), and administrative efficiency had the second highest prevalence (79 papers).

Dimensions (public values)	Number of papers
Administrative efficiency	79
Service improvement	121
Citizen engagement	9
Other	6

Table 3. Number of papers containing the different dimensions of public values

In relation to the different units used in the analysis, a paper can report 1) documented, and/or 2) reported but not documented and/or 3) expected effects. The different units can give several combinations due to the impacts included in the analysis. The number of papers containing the dimensions of public values with different combination of units and impacts are illustrated in Table 4.

Impact	Public values											
	Administrative efficiency			Service improvement			Citizen engagement			Other		
	Documented	Reported, not documented	Expected	Documented	Reported, not documented	Expected	Documented	Reported, not documented	Expected	Documented	Reported, not documented	Expected
Positive	49	9	17	92	12	29	5	1	1	2	2	1
Negative	8	0	0	6	1	0	3	0	0	1	0	0
No difference with/without technology	4	0	0	10	0	0	0	0	0	0	0	0
Inconclusive	2	0	0	5	0	0	0	0	0	2	0	0

Table 4. Number of papers containing public values with different units and impacts

Table 4 provides numeric findings from our analysis in relation to our concept matrix. For addressing the first objective of our study, there is also a need to elaborate the results with qualitative data. This is illustrated in Table 5. Due to space limitation, only one reference is provided to illustrate each combination of dimensions, unit and impact.

Dimension	Unit	Impact	Examples
Administrative efficiency	Documented	Positive	• *Effective chronic condition management (Salisbury et al. 2015)*
		Negative	• *Telemedicine model of initiated phone calls by a health-care provider had a negative effect on resource use* (Berkhof et al. 2015)
		No difference with/ without technology	• *No difference in length of consultation* (telemedicine/in-person)(Agha et al. 2009)
		Inconclusive	• *Responses were divided regarding whether or not Florence helps clinicians save time and whether adoption of Florence telehealth is cost-effective* (Cottrell et al. 2015)
	Reported, not documented	Positive	• *Use of videoconferencing for psychiatric consultation has a viable option for an integrated, community-based mental health service* (Doze et al. 1999)
	Expected	Positive	• *Fully developed, with a large-scale networking of primary care centers involved in teleconsulting, telemedicine should be cost-effective* (Made et al. 1999) .
Service improvement	Documented	Positive	• *There were significant improvements in the primary outcome measures; pain(44%), stiffness (37%) and physical function (38%)* (Wong et al. 2005)
		Negative	• *Had a negative effect on health status* (Berkhof et al. 2015)
		No difference with/without technology	• *No significantly difference (face-to face/technology) in adherence outcomes and depression outcomes* (Kalapatapu et al. 2014)
		Inconclusive	• *The studies provided variable and inconclusive results for outcomes such as psychological measures* (Currell et al. 2000)
	Reported, not documented	Positive	• *With daily monitoring via the telehealth technology, care coordinators may have been able to identify subtle health changes, assist patients in managing their health problems, and resolve these problems before they became serious enough* (Barnett et al. 2006)
		Negative	• *Patients with limited experience with the internet and information technology, who worked out of town, or who had an outdoor hobby would not be able to benefit from such a service* (Abdullah et al. 2016)
	Expected	Positive	• *IT can be used to support identification of at-risk individuals, cardiovascular disease risk assessment and management, care planning, patient self-management, and evaluation of improvements* (Wells et al. 2010)
Citizen engagement	Documented	Positive	• *Using asynchronous communication in healthcare may be an important instrument to increase patient participation leading to self-management*(de Jong et al. 2014)
		Negative	• *Patients less engaged (less talkative) and more likely to take on a passive role during Telemedicine consultations* (Agha et al. 2009)
	Reported, not documented	Positive	• *Facilitates empowerment of patients in their own health* (Wilhelmsen et al. 2014)
	Expected	Positive	• *Telemedicine-based ulcer follow-up can positively influence patient competence and involvement in diabetes self-management, including using preventive strategies to avoid or delay new foot ulcers* (Iversen et al. 2016)
Other	Documented	Positive	• *Increase women's decision-making, social status and access to health resources. Can influence gender relations in meaningfully positive ways by providing new modes for couple`s health communication and cooperation* (Jennings and Gagliardi 2013)
		Negative	• *Human dimension is a possible problem area when using medical information systems* (Burghgraeve and De Maeseneer 1995)
		Inconclusive	• *Change in patient-reported adherence to BP medications, physical activity, salt intake, alcohol use, and weight did not have significant mediating effects on change in SBP, even though medication adherence and salt intake improved in the intervention group* (Margolis et al. 2015)
	Reported, not documented,	Positive	• *A change in evaluation methodology, from a strictly technical approach to a more comprehensive one, would result in better and less biased decision making in connection with the introduction of IT in healthcare* (Burghgraeve and De Maeseneer 1995)
	Expected	Positive	• *The magnitude of change (over 1000 steps per day or approximately half a mile) is clinically meaningful and, if continued, is expected to result in long-term health benefits such as reduced cardiovascular and diabetes risk* (Glynn et al. 2014)

Table 5. Examples of effects of ICT in primary healthcare in a public value perspective.

Discussion

In this section the findings from our analysis will be discussed and used as a basis for answering the stated objectives of our study:

- provide an overview of the effects of introducing ICT in primary healthcare

- describe to what degree the reported effects of ICT in primary healthcare is documented

As shown in Table 4 and 5, our analysis reveals a wide variety of effects from use of ICT in healthcare. The analysis showed that the identified effects could be mapped to the public value framework by Rose et al. (2015). Our analysis demonstrates that "Service improvement" is the most commonly found value among the three different value positions. Across the three value positions, most of the papers reported effects which were positive and documented (146 occurrences), but some of them are also reported negative, documented effects (17 occurrences), no difference with/without technology, documented (14 occurrences) or inconclusive (7 occurrences). The analysis also shows that there are many studies that report positive effects that are either expected (47 occurrences) or reported, but not documented (22 occurrences).

The emphasis on service improvements is interesting, as use of ICT in general is often motivated as a means to increase (administrative) efficiency. Further research should investigate if this is characteristic for the health context.

Previous research (Hofmann 2013; Martin et al. 2008; Wootton 2012) states a lack of documented effects from ICT in healthcare. Interestingly and surprisingly, the results from this review indicate the opposite. We identified a wide variety of documented effects related to ICT in primary healthcare from the literature. Hopefully, Table 5 can be used as a tool to get some examples of the effects of ICT in primary healthcare related to public values.

Table 5 provides an overview of the distribution of effects from ICT in primary healthcare at an aggregated level. Space constraints limit us from providing the full details behind the aggregation. However, the positive effects related to administrative efficiency were typically related to improved work processes and improved access to expert assistance (Barton et al. 2011). Negative effects in this category were typically related to increased workload and perceived negative changes in professional roles (MacNeill et al. 2014). In the area of service improvement, positive effects were typically related to improved access to service, increased user satisfaction and improved health condition (Bassilios et al. 2014). Negative effects in the same category were often related to technical and usability issues (Verwey et al. 2014). Positive effects related to citizen engagement were related to patient empowerment and participation (Fairbrother et al. 2013). Negative effects in this category were related to security risks related to confidentiality and negative impact on engagement due to technology reservation (Chang et al. 2013).

While we were able to map effects from the papers to the public value framework in Figure 1, we did experience challenges in doing so. Distinguishing between administrative efficiency and service improvements was experienced as relatively straightforward. However, the distinction between service improvement and citizen engagement was, at times, challenging. E.g. effects related to increased participation and patient empowerment, were classified as belonging to the citizen engagement category. However, this can also be seen as a variation of service improvement. On the other hand, we categorized effects related to access to service as service improvement. Also here, arguments could be made that this relates to citizen engagement. The boundaries between the two categories are seen as somewhat blur when applied in our context, and future research should aim at increasing the conceptual clarity of the framework.

Our analyses did not include an in-depth investigation of the size and quality of the studies in our sample. One can expect variations in both areas and a more careful sample selection could have affected the results. While we acknowledge that this is a potential weakness of the study, we argue that our results are valid and interesting, particularly in light of our sample size and the exploratory nature of our work.

Conclusion

This study has investigated a carefully selected sample of literature to understand effects from ICT in primary healthcare, whether or not effects mentioned in the literature are documented.

Our structured review of the literature was guided by The rival value propositions for eGovernment framework (Rose et al. 2015, p. 46).

Our results are summarized in Tables 3, 4 and 5 and show a vast variety of effects from ICT in primary healthcare. Interestingly and rather surprisingly, we found that a substantial amount of effects has actually already been documented in the literature. Further, we found no overweight of effects related to the value category "Administrative efficiency", but rather overweight of effects related to "Service improvement".

Implications

Our study has implications for both theory and practice.

Previous research (Hofmann 2013; Martin et al. 2008; Wootton 2012) states a lack of knowledge about effects and values of ICT in healthcare. This review provides an overview of the effects of ICT in primary healthcare and to what degree the effects are documented. Our findings suggest that the level of known, and also documented, effects are substantially greater than what has been suggested in the literature. Our analyses constitute a promising start of a mapping of effects from ICT in primary care that should be extended into a more comprehensive overview of potential effects. Future studies should corroborate the overview and provide additional details concerning the nature of the effects. Both research and practice can utilize such an overview. Our results can be used as a starting point for further theory development, e.g. in developing theoretical models of relationships between constructs like public values and effects.

Our analysis was based on the existing framework; Rival value positions for eGovernment (Rose et al. 2015). Whilst theoretically sound, the framework has had substantial empirical grounding. Our study illustrates that this framework proved useful as analytic tool for generating descriptive knowledge, and thus contribute to validation of this framework.

Our findings may be helpful as guidance for decision-makers when planning and implementing ICT in primary healthcare services. The extensive overview of potential effects can provide insights into what can be expected from investments in eHealth.

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Stakeholder Contradictions in Early Stages of eHealth Efforts

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Abstract

Use of information and communication technology (ICT) in healthcare has increased substantially over the past decades. Implementation of ICT in municipal health services (eHealth) involves a variety of stakeholders, and may lead to changes in the roles of providers and patients. Coordination, communication, early identification and involvement of key stakeholders in eHealth projects have been highlighted as important. However, research often takes a narrow perspective and pays scant attention to conflicting drivers. This study used a qualitative approach to identify and investigate contradictory stakeholder interests in the early phase of a municipal eHealth project. Analysis using Stakeholder Theory (ST) and Dialectic Process Theory revealed two important contradictions; 1) effective service versus efficient service and 2) technology enthusiasm versus reluctance to change. The analysis illustrated the usefulness of combining these theories in eHealth efforts. Implications from our research suggest that stakeholder management should be considered to prevent conflicts in eHealth projects.

1. Introduction

Healthcare services are facing substantial challenges the coming years. The age composition in the population changes and chronic diseases and diseases related to our lifestyle are expected to increase [1, 43]. Providers of healthcare services are trying to come up with novel solutions to support more people at home, but it is challenging to secure funding and enough health personnel. Therefore, there is a need to identify new and innovative solutions to face these challenges [1]. Technology devices are increasingly being integrated into healthcare as an intervention to help support people at home [26].

Technology implementations are changing the roles of healthcare consumers and providers, and make complex personal, social and organizational arrangements even more complex [22]. Increased division of labour has been highlighted as an important effect as technology increases General Practitioner´s (GP) work burden and undermines their professional autonomy [25]. Negative effects on resource usage is also reported when providing care by electronic communication for patients with chronic diseases [2]. Place- and time dependant delivery is another area where healthcare may be reshaped as it intervenes with traditional care characteristics [37]. Interorganizational systems force different stakeholders to cooperate, even though they can be seen as competitors with different interests and attitudes [31]. This complexity requires coordination and communication among different stakeholders [40] to ensure that technology supports the needs and values of key stakeholders.

Existing research of eHealth-projects have mostly been done from a single perspective, that of health personnel [20, 36], and pay scant attention to complex drivers. As technology use in healthcare can lead to new ways of working, a perception of shifts of professional roles can lead to conflict. The research of Segar et al [33] highlights the potential areas of boundary conflicts when implementing technology to support patients with long term conditions. Here, nurses working with technology suggested new roles and identities, but nurses providing traditional health services and GP´s were sceptical and ambivalent about the contribution, and communicated a sense of protectiveness for retaining of their positions [33].

In contrast to private sector, public sector has been reported to have a more diverse body of stakeholders [42]. A crucial activity in projects in public organizations is therefor arguably the stakeholder analysis [42]. This is essential for early identification and potential inclusion of key stakeholders to understand and address important values, drivers and goals [40, 37], as well as understanding suitable combinations of non-technological and technological resources that can provide sustainable benefits [42, 10].

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In a research domain similar to eHealth, i.e. eGovernment, an analysis of key stakeholders using Stakeholder Theory (ST) and Dialectics revealed conflicts with potential to inhibit successful project outcomes [13]. This study applies the same analytical framework in the field of eHealth, to reveal possible contradictions between stakeholders in early stages of eHealth efforts.

The research question for this study is therefor: Which contradictory stakeholder interests can be found in the concept phase of a municipal eHealth project?

2. Background and theory

Theory is used for two purposes in this study. First, the eHealth literature is used as a context. Second, ST and Dialectic Process Theory are presented as an analytic lens for this study.

2.1. eHealth

Martin, Kelly, Kernohan, Bernadette McCreight and Nurgent [26] argue that there is considerable conceptual confusion regarding terminology related to research on ICT and healthcare. Terms like telecare, telehealth, telemedicine, eHealth and mHealth are used interchangeably, and various definitions of these concepts exists [17, 34, 44].

Given the different use of terminology related to ICT in healthcare, Eysenback´s [11] definition on eHealth is adopted in this study as it covers both the dimension of technology development and the way of thinking to improve healthcare delivery in a global perspective: *"e-health is an emerging field in the intersection of medical informatics, public health and business, referring to health services and information delivered or enhanced through the Internet and related technologies. In a broader sense, the term characterizes not only a technical development, but also a state-of-mind, a way of thinking, an attitude, and a commitment for networked, global thinking, to improve health care locally, regionally, and worldwide by using information and communication technology"* [11, p.2-3].

As Eysenback [11] points out, the development of eHealth technologies involves more than designing a product or service, it also has a social dimension for improving the healthcare services. When creating new technology in healthcare services, it is important to know how the process of healthcare delivery actually runs, e.g. how payment is organized and who the key stakeholders are. Involvement of stakeholders is seen as important for reflection on goals, drivers and values of the developed eHealth technologies as this will illuminate the interdependencies between people, their sociocultural environment, technology and the infrastructural organization of healthcare [40].

Implementing technology into health- and care services challenges the organizations, with technological possibilities on one side, and current service delivery on the other side[10]. Barriers for technology implementation seem to remain unchanged, like increased time and effort for health personnel and lack of user involvement in development of technology. Incorporation of experiences from earlier projects are reported as appropriate to avoid well known barriers and secure successful implementation [20]. Meanwhile, in the field of eHealth it seems difficult to realize the expected effects of using technology [10, 18, 19] and varying degrees of effects for patients and health personnel are reported [35, 44].

Careful communication and coordination is required among the different stakeholders when introducing eHealth technologies, but seems hard to realize in practice [40]. Although most eHealth studies involve a number of actors or entities, an explicit stakeholder focus is often missing [39]. Van Gemert-Pijnen, Nijland, van Limburg, Ossebaard, Kelders and Eysenbach [40] argue that *"as long as the need to create a better fit between technological, human, and contextual factors continues to go unaddressed, the uptake and impact of eHealth technologies will remain at the very least poor, and at best undecided"*

2.2. Stakeholder theory

The focus on stakeholders and stakeholder management has received much attention in several research areas since the publication of the book *Strategic Management: A stakeholders Approach* by Freeman in 1984. ST focuses on the stakeholders interests rather than the compromises that sometimes have to be made [15, p.28]. It's important to understand how the relationships between different groups with ownerships in a business or service work, because value is created when these groups interact. It is the manager's job to build and maintain these relationships, so if conflicts of interests occur the manager needs to find a solution that offers an optimal alignment of interest in order to realize an organization´s goals [15].

Freeman, Harrison, Wicks, Parmar and De Colle [15] argue that all stakeholders have equal right to act to protect their interests, but they are not equally important over time. To avoid stakeholder restitution, interests of key stakeholders should be aligned over time.

ST can be, and have been used in three different approaches [9]:

- Descriptive approach; presents models for describing organizations, and competitive interests of stakeholder value observed in reality.
- Instrumental approach; a framework for investigating possible connection between the realization of performance goals and management of stakeholders.
- Normative approach; the stakeholders are persons or groups with justified interests of corporate activity, have interests of intrinsic value and appeal to underlying concepts e.g. a group utilitarianism or "rights".

Donaldson and Preston [9] argue that the core of the theory is normative and goes beyond the fact that organizations have stakeholders, and that the three aspects are nested within each other.

Even though Freeman et al [15] and Donaldson and Preston [9] focused on private firms and businesses, ST has later been used in public sector contexts. Flak and Rose [14] e.g. used ST in the eGovernment domain, and stakeholder theory has been applied in studies within healthcare management [3]

When searching for research in the field of eHealth, we found few studies using this theory. A few notable exceptions exist. Mengesha, Kebede, Garfield and Musa´s study [28] used ST in a Telemedicine project in Ethiopia. Here, ST resulted in a robust analysis and an explanatory way to illuminate the different interests among the stakeholder groups and how it affected the use of Telemedicine. Pagliari [30] provided a list of different stakeholders related to eHealth e.g. health system managers, IT experts, healthcare organizations, health professionals, policy makers, and vendors. A recent review of process modelling in eHealth conducted by Garmann-Johnsen and Hellang [16] suggests a typology of 4 stakeholder groups; acceptors, providers, controllers and supporters.

Based on the above, this study will use a descriptive approach to ST to address the research questions.

2.3. Dialectic process theory

Dialectic process theory is one of four basic theories which Van de Ven and Poole [38] suggest can be used for explaining processes of changes in organizations. The theory assumes that *"the organizational entity exist in a pluralistic world of colliding events, forces, or contradictory values that compete with each other for domination and control. These oppositions may be internal to an organizational entity because it may have several conflicting goals or interest groups competing for priority"* [38, p.517].

Thinking in terms of contradiction is the key element in dialectical analysis [27], and requires two or

more clear entities that express this opposition by engaging and confronting each other in conflict [38]. Figure 1 illustrates how a contradiction occurs; between two opposite aspects, thesis and antithesis [13].
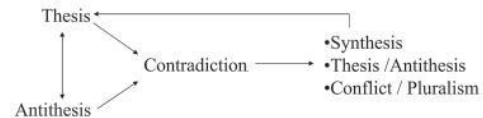
Figure 1. Dialectic process lens to development and change (in Flak et al [13], adapted from Van de Ven and Poole, [38]).

The starting point in dialectic process theory is the contradiction, which is seen as a whole, and the only way to learn about the contradiction is to investigate the aspects (thesis and antithesis) and their relation. It is not possible to learn about the contradiction by investigating only one aspect. Thesis cannot be fully understood without considering the antithesis [27]. A solution to the contradiction can either turn into 1) a synthesis and then be a new thesis, as the dialectic process continues, or 2) continue in the organization as the existing state of affairs, or survival of only one of the aspects, or 3) converts into conflict [38].

There is an increasing interests of research related to eHealth innovation as this is a growing field, and many of the studies investigate problems or success factors related to implementation [20]. Cho, Mathiassen and Robey [6] continue the line of research related to telehealth innovation by investigating the relationship between adoption of technology and organizational resilience with use of dialectic process theory. For understanding the future success of eHealth innovation in a large extent, Cho et al [6] suggest a dialectical analysis of the involved contradictions.

Flak, Nordheim and Munkvold [13] have shown the use of dialectics in stakeholder analysis in a Government context to uncover the many heterogeneous stakeholders and expected contradictions. We have not seen studies of stakeholder contradictions in eHealth and therefor seek to explore the nature and impact of the phenomenon in this context using dialectic process theory and ST as an analytical lens.

3. Method

This section describes the research method used in the study and the outlines case.

3.1. Research method

A qualitative research approach [29] was adopted for addressing the research question. First, a review of reports, research and national strategies and guidelines was conducted to get an overview of the field. Second, a list of possible key stakeholders was compiled and used as a starting point for observational study. The observational study was used for identifying stakeholders and understanding their workflows. Third, fifteen focus groups were conducted by one of the researchers in February to April 2016. The interviews lasted from 1-1,5 hours and were recorded. An interview guide was used to highlight relevant themes for the objectives of the study. The content from the interviews were coded by one of the researchers into themes from a stakeholder perspective, and contradictory interests were identified through several discussions between the two researchers.

Respondents were selected from different levels of health and social services in a municipality in the southern part of Norway and included user representatives. The list of key stakeholders was used in the recruitment process and the respondents were recruited by their managers. This may cause a potential for social bias, but because the majority of the respondents are working in shifts, and their managers are responsible for maintaining the service and know how to provide backup, it was decided to be the best way to recruit respondents. Some key stakeholders were discovered during the interviews and included in the project. There was a great enthusiasm among the respondents and they expressed gratitude for being included. After fifteen focus groups, little new information arose.

Table 1 provides an overview in terms of organizational units and position of the respondents.

Table 1. Overview of respondents.

Organizational Units	Position	Nr. of Interviews	Nr. of Respondents
Out-of-hours emergency primary care	Health personnel	1	2
Telemedicine Centre	Health personnel	1	10
Home care	Health personnel incl. professionals association representatives and health and safety	5	17
	representatives		
Home care	Technical personnel and system administrator	2	4
Health and care	Service managers	3	15
Health and social service	Top managers	1	2
Mental health and social work	Service managers	1	4
Senior Citizen Council	User representatives	1	10
Total		15	64

3.2. Case description

Norway is one of the Scandinavian countries, and has roughly five million inhabitants spread across nearly four hundred thousand square kilometers. Norway has a parliamentary democracy, and is divided in three different administrative levels: state, 19 counties and 428 municipalities.

The healthcare system can be seen as semi-decentralized, where the responsibility for specialist care lies with the state. Municipalities have freedom in organizing health services and are responsible for provision and funding of primary care (including physiotherapy and nursing, rehabilitation, and out- of-hour's emergency primary care). Primary care is financed from specific purpose- and block grants from the central government and municipal taxes [32].

The Ministry of Health is responsible for supervision and regulation of the system, but several tasks are delegated to subordinate agencies e.g. the Directorate of Health. The organizational structure is built on the principle of equal access to services for all inhabitants regardless of geographical location and economic or social status [32, p. 15].

The last few years´ focus on healthcare services has been on improvement of coordination between healthcare providers, patient safe issues, and quality of care. As is typical in the Scandinavian countries, patients are more often than not organized, mostly related to particular diseases or disease groups, and employees are organized in trade unions and professional associations[32].

In summer 2015, a municipality on behalf of a region in the southern part of Norway, was asked by the Norwegian Directorate of Health to establish a central for receiving and evaluating safety alarms (henceforth referred to as the Response Central). The

project received some financial support from the Norwegian Directorate of Health to procurement of technical solutions, but had to finance the remaining themselves. As the management of safety alarms today is mostly conducted by healthcare professionals working directly with patients in homecare services, the initiative will lead to a major change in workflow and provision of services.

As a starting point, it was decided to analyze current service and future needs, with a goal to provide recommendations for optimal organization of the service, and identify if this service can be seen in connection with similar services in the municipality (e.g. Out-of-hours emergency primary care or Telemedicine Centre). The analysis can be seen as a part of concept phase in a framework for project management, built on the well-known project management methodology; Prince2.

4. Results

In addition to the stakeholders introduced in the table of respondents (Table 1), the following key stakeholders was identified (illustrated in Figure 2): patients and their relatives, other municipalities in the region seen as collaboration partners, politicians, technology vendors and the Directorate of Health. The stakeholders were identified during the analysis based on input from the respondents and information from the document study.
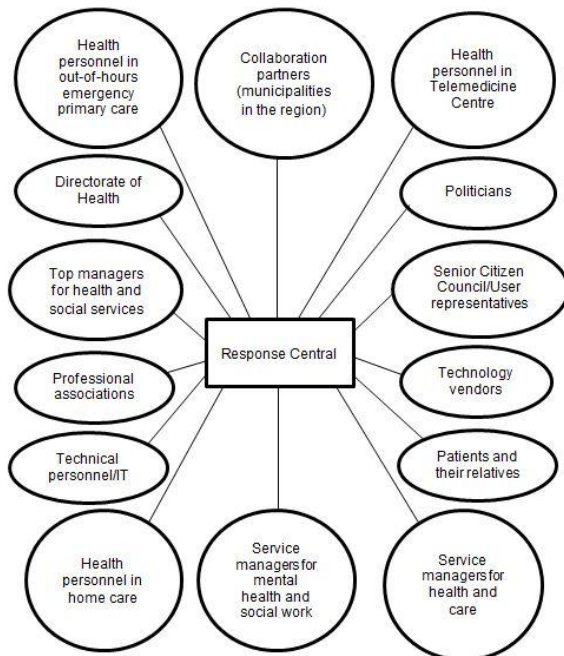

Figure 2. Stakeholder map.

The Norwegian Directorate of Health is the initiator of the project, and progress and results will be reported at a national level. Technology vendors are natural stakeholders in this project as the Response Central is dependent on technology for delivering the expected services, e.g. devices like safety alarms, and a system for routing, receiving and documentation. Politicians are also identified as stakeholders, as they allocate funding and must be able to defend the money spent in relation to the new service. Patients and their relatives are end-users of this service, and an important stakeholder- group, which in this study are represented by the Senior Citizen Council. The last key stakeholder group is collaboration partners, which in this case are other municipalities in the region. Based on the objective of mapping current service and future needs, it was considered adequate to conduct focus groups of the respondents listed in table 2, even though some more key stakeholders where identified through the process (Figure 2) and possibly would have added more interesting perspectives to the case.

In addition to questions related to experience and future needs, all respondents were asked about their thoughts (positive and negative) about the Response Central initiative, and if they had some input on how to establish the service in a good way. The Dialectic Process Theory was used to identify contradictory interests (presented in Tables 2 and 3).

Contradictions were found in two distinct areas: 1) effective (*adequate to accomplish a purpose* [7]) service versus efficient (*performing or functioning in the best possible manner with the least waste of time and effort [8])* service and 2) technology enthusiasm versus reluctance to change. Contradiction one can be seen as a main class of contradictions, exemplified with different sub- contradictions, i.e. a) personalized service versus quick and efficient service, b) in-house service delivery versus collaborative service delivery and c) technicians responsible for technology versus health professionals responsible for technology. Explanations of the different sub- contradictions of effective service versus efficient service are presented in Table 2.

Table 2. Examples and explanations of contradictions related to effective service versus efficient service.

	Thesis (effective service)	Antithesis (efficient service)
Contradiction 1a: personalized service versus quick and efficient service	Personalized service: manual work performed by a service provider in serving a customer one-to-one at customer's site [4]	Quick and efficient service: performing or functioning in the best possible manner with the least waste of time and effort [8]
Contradiction 1b: in-house service delivery versus collaborative service delivery	In-house service delivery: conducting an activity or operation within the organization, using its own employees and time to keep a department or organization activity [21]	Collaborative service delivery: independent individuals and organization combining their human and material resources so they can accomplish objectives they are unable to bring alone [24, p. 183]
Contradiction 1c: technical personnel responsible for technology versus health personnel responsible for technology	Technical personnel responsible for technology: technical personnel arrange and are responsible for technology in the patients home	Health personnel responsible for technology: health personnel have knowledge and skills to take care of technology in the patients home

Due to space limitations, only one of the three sub-contradictions (1a: personalized service versus quick and efficient service) is used to illustrate contradiction 1: effective service versus efficient service (if permitted, evidence related to contradiction 1b and 1c can be made available in an appendix). In addition to contradiction 2: technology enthusiasm versus reluctance to change. Table 3 provides an overview of the contradiction and stakeholders involved.

Table 3. Overview of contradictions and stakeholders involved.

	Contradiction 1a: personalized service versus quick and efficient service	Contradiction 2: technology enthusiasm versus reluctance to change
Stakeholders involved	-Health personnel in home care, Service managers for health and care, Service managers for mental health and social work, Top managers (thesis) -Health personnel in home care, Service managers for health and care, Service managers for mental health and social work, Top managers, User representatives (antithesis)	-Health personnel in home care, Service managers for health and care, Service managers for mental health and social work, Top managers, User representatives, (thesis) - Health personnel in home care (antithesis)
Thesis	Personalized service (effective service)	Technology enthusiasm;persons who are exited about technology [45]
Antithesis	Quick and efficient service	Reluctance to change ; action taken by individuals and groups when they perceive that a change is occurring as a threat to them[5]
Outcome	Emerging synthesis. Temporary focus on redefining the specific service	Thesis prevails. Continue to implement technology with focus on benefits realization and change management

As listed in Table 3, the contradiction can be found within stakeholder groups (both thesis and antithesis) and between stakeholder groups. In the next session, the contradictions will be discussed and examples from the interviews used to illustrate thesis and antithesis.

5. Discussion

Contradiction 1: personalized service versus quick and efficient service

This contradiction proved to be a core theme in almost every interview. It is understandable that there is substantial engagement related to the Response Central as it changes the workflow for both health personnel and service managers and also the delivery of services to end-users.

> Thesis of contradiction 1a (personalized service):
> *«The positive about safety alarms today is that we know the end-users. It will be very difficult for a common central (ref. Response Central) when they don't know the end-users. I think it will be a bad organization, and I cannot see how this will be successful... We know what to do if we receive the alarm, we will investigate what has happened and all that...but if they are managing it from a common central, I cannot see quite how... what's the idea?"*
> (Health personnel in home care)
>
> Antithesis of contradiction1a (quick and efficient service):
> -*"The way it is today, it takes time before they are calling back (when safety alarms are released). Here (ref. Response Central), you will get a response almost immediately"*
> (User representative from Senior Citizen Council).
> - *"If an alarm that really matters is released... if it had been me who needed help, it would have been the same who responded it, if I only received help, and I had confidence in that those who came to me have expertise to give me the help that I needed"*
> (Service manager for health and care).

These quotations show contrast and represent different aspects of the contradiction. The interviews provided rich empirical data supporting this contradiction and the involved stakeholders. The above are just examples to illustrate and support the contradiction.

Due to the high number of stakeholders supporting the thesis, several different causes can be envisioned. Healthcare professionals are trained to support and give help to people based on a holistic view of humanity. They have known many of their patients for a long time, and strive to cover their basic needs (physical, social, psychical and spiritual/cultural). As this has been the practice of service provision for many years, this initiative can be seen as a threat to both profession and practice.

Service managers and top managers are responsible for how the service is run, related to e.g. quality, economy and as an employer. They know their employees and rely on their expertise to provide expected services to a large group of patients. As the interviews were conducted in the concept phase of the project, there were little specific information about how the new service will be financed, how it will affect the employees, and whether it will lead to increased service quality or not. This uncertainty may have affected the perspective of service/top managers and also for health personnel, as they are responsible for service delivery to people in need. Further, it has been argued to be common to fear the unknown[23].

The only difference in stakeholders involved in the thesis and antithesis is the user representatives (antithesis). It was an interesting discovery that the stakeholder group which represents the end-users was warmly welcoming the Response Central. This group emphasized the importance of quick and efficient service rather than personalized service. This may be based on experiences of e.g. slow response to released alarms or interruption of healthcare's visiting patients by telephones or safety alarms resulting in loss of focus on the initial patient. By organizing the service differently, they think it could provide professional management of safety alarms, and also increase the quality of the provided home care services.

Health personnel have a high work load and express stress and dissatisfaction when safety alarms and telephones interrupt their work. From this point of view, some can see the Response Central as an aid to ease their workload. Service managers have a broader perspective on their services, and are concerned about the demographical changes. If it is possible to increase the effectiveness and efficiency with use of technology and organizational changes, some are positive and willing to support such action. Effective and efficient services are also important for top managers and this may be one of the reasons for representing the antithesis.

Through this brief discussion, different causes for thesis and antithesis are suggested. It is particularly interesting to observe that health personnel claims to speak for the good of the patient (thesis), when noting that the user representatives had a very different idea about what constitutes a good service for the end-users.

In reality, the antithesis had more power than thesis, due to the decision of establishing the Response Central. However, it is important to manage the involved stakeholders and the different aspects, because value is created when these groups interact. There is ongoing work focusing on clarify expectations and defining the specific service, with distinct criteria for the service. This can be seen as a step in the direction of integrating personalized service (thesis) and quick and efficient service (antithesis).

Contradiction 2: technology enthusiasm versus reluctance to change

As presented in Table 3, stakeholders from all the different levels of health and social services are involved in the thesis of contradiction 2 (technology enthusiasm). It is interesting to reveal only health personnel from home care involved in the antithesis of contradiction 2 (reluctance to change).

Thesis of contradiction 2 (technology enthusiasm):   -*«We are whining about the technology, because it is extremely important to us»* (Service manager for mental health and social work)   - When asking the user representatives what they think of the future and technology, several say in unison: *«Implement technology everywhere it can be used! »* (User representative from Senior Citizen Council)
Antithesis of contradiction 2 (reluctance to change):   *"If the Response Centre is going to be centralized… then I won't work anymore. It will not be exciting to work as a health personnel if someone else are going to tell us what we should do»* (Health personnel in home care)

The user representatives were enthusiastic about technology and related their enthusiasm to patient empowerment and that people would be able to live longer and safer in their own homes. Over the past few years, substantial attention has been put on informing the user representatives about the possibilities new technology may bring. Based on the enthusiasm for technology it appears that user representatives have accepted the value of, and benefits from, use of new technology in this context.

During the interviews with health personnel, all respondents suggested new features and technology that would have helped them in their work, either for better security and quality of the care (e.g. monitoring at night instead of personal visit- who can be noisy and wake up the patient) or for better resource use (e.g. bidirectional communication through the safety alarm attached to the patient, rather than an extra drive to the patient revealing a false alarm).

Service managers for health and care expressed enthusiasm for technology in relation to the demographical changes and the challenge of how to provide future services. They thought there would be organizational and professional change in service delivery within few years, and were eager to use the next years preparing for this. Despite their enthusiasm, they emphasized the heavy work-load in today's service delivery and that eHealth project managers need to communicate a clear vision of possible effects for optimal organizational involvement.

Service managers for mental health and social work are responsible for people with substance abuse, mental disorders and the mentally retarded. Among others, their employees are taking care of children with epilepsy and people who are violent due to drug problems. In these cases, they use technology like epilepsy alarm or safety alarms for employees. They must rely on- and are dependent on these devices, as it can lead to serious consequences if the technology does not work. When thinking of their patient groups they were creative, suggesting early introduction of technology, and hoping for a further development of sensors and devices.

From the perspective to top managers, a clear goal of the future service, with technology included, was communicated. This focus was related to expertise and quality, as the technology lead to possibilities and organizational changes in service delivery. A robust technical platform was also mentioned as a dimension when considering implementation of technology.

In addition to be enthusiastic about new technology, health personnel in home care expressed reluctance to change in varying degree in the majority of the interviews. This is seen as the antithesis in contradiction 2. Acceptance and resistance is a well-known contradiction, also in the health context [41]. There can be several reasons for this perspective in this specific case. One motive can relate to the same cause for thesis (personalized services) in contradiction 1a, a threat to both profession and practice as this project and future implementation of technology may lead to new ways of working and a perception of shifts of professional roles. Another motive for reluctance to change may be related to insecurity of values and effect, as the interviews were conducted in the early stage of the project when a clear business plan had not yet been developed and communication failed to motivate the initiative. It is an interesting finding that some of the same health personnel who were enthusiastic towards technology expressed reluctance to change. The observations and interviews revealed that health personnel were concerned about their heavy workload. From their perspective, it appeared difficult to accept that technology implementation and change in workflow would help to relieve heavy workload, and assist service delivery in a more efficient way. Previous research points out that an innovation of a service may be limited depending of the stakeholder group, i.e. health personnel responsible for their clinical work. This perspective may coincide with the research, and be a natural reason for limitation in health personnel´s thoughts for the reality of the challenges the healthcare service soon will be facing.

Even though we discovered a general technology enthusiasm from the different stakeholder perspectives,

the discussion showed different values and drivers behind the enthusiasm. While this complexity poses challenges, our unveiling of details is considered to bring considerable opportunity for future implementations of eHealth. We know technology devices are increasingly being integrated into healthcare [26]. Due to the contradiction uncovered by our analyses, we argue that future eHealth projects should be managed in a strategic way to communicate values, benefits and to avoid stakeholder resistance.

The interviews representing different perspectives provided an in-depth understanding of how healthcare service was provided in this specific case, and gave a sound basis for dialectic analysis. Hopefully, the dialectic analysis in the early stage of the project can empower the organization to address the contradictions by improving communication and coordination of the different stakeholders.

6. Conclusion

This study has investigated the potential for stakeholder conflicts in eHealth efforts. A qualitative research approach was adopted to get in-depth understanding of an eHealth effort and involved stakeholders. Fifteen focus groups were conducted in the early phase of a project related to establishment of a Response Central for safety alarms. Interview data were coded into different themes from a stakeholder perspective, and the dialectic process theory was used

7. References

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to identify contradictory interests. Two contradictions are presented; 1) personalized service versus quick and efficient service, exemplified with different sub-contradictions, and 2) technology enthusiasm versus reluctance to change.

Among other, it is interesting that health personnel speak for the good of the patient (personalized service), but user representatives have very different perceptions about what constitutes a good service (quick and efficient service). It is also notable that stakeholders from all the different levels of health and social services, including user representatives, were enthusiastic towards new technology. Health personnel in home care are the only stakeholder group who express reluctance to change.

Even though the results did not reveal contradictions specific for eHealth context, this study has shown the importance of understanding the stakeholder interests in order to address emerging or potential conflicts. Further, our study illustrates the usefulness of combining ST and Dialectic Process Theory for identifying stakeholders and contradictions in eHealth efforts. This can be seen as the main contribution, as it supports practice to focus properly in a demanding reality. The analysis can be used as a tool for communication and coordination among the different stakeholders to prevent potential conflicts through the next phases of the projects similar to our case.

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Organizational Learning to Leverage Benefits Realization Management; Evidence from a Municipal eHealth Effort

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Abstract. While work with benefits realization requires organizational learning to be effective, emphasis on organizational learning is hard to find in benefits realization studies. To remedy this research gap, we study how organizational learning theory can contribute to improve benefits realization processes. A qualitative approach was used to gain in depth understanding of benefits realization in an ICT healthcare services project. We found that individual learning is present, but organizational learning has not been given explicit attention neither in the project nor in the literature of benefits realization management. We argue that the individual learning in the project forms an excellent basis for organizational learning, i.e., in the form of organizational structures, routines, and methods for benefits realization.

Keywords: Benefits management · Organizational learning theory · Complex organizations · Public sector · eHealth

1 Introduction

To prepare for the rapid demographic changes and the increased number of citizens suffering from non-communicable and compounded diseases [1, 2], the healthcare sector is dependent on innovation to manage future service-provision. This, among other topics, is emphasized by the European Commission when they included *Health, Demographic Change and Wellbeing* in their framework for research and innovation, *Horizon 2020* [3].

Where will this innovation occur? Information and communication technologies (ICTs), a wide range of which are being implemented into the healthcare sector [4, 5], are interventions supporting people in living safe and independent in their own homes; they can also improve quality of life and provide efficient and effective services. Even though there is enthusiasm to use information and communication technology (ICT) in healthcare services [6], adoption often occurs without a true understanding of the added value of ICT to healthcare service or a comprehensive evaluation of the health impact [4, 6, 7].

In the field of eHealth, it seems difficult to realize expected benefits [5, 8, 9] and varying levels of effects are reported by patients and healthcare professionals [6, 10]. Hofmann [11] argues it should be seen as a moral problem, i.e., not having knowledge of the effects of technology, as ICT is rapidly being adopted into many countries' healthcare services. Authorities have been hesitant in making benefit realization approaches a requirement, but are eager to better understand the potential benefits and how to produce them [12].

Several benefits realization tools for public sector have been developed and these are increasingly being adopted by praxis [12, 13]. There is, however, little empirical evidence of the benefits realization process as it occurs in practice [14]. As technology is seen as a helping tool for managing the future challenges in the healthcare services and are progressively being integrated into the healthcare services, there is a need for research to document whether ICT contributes and how the public sector should work to secure such gains.

Learning to use benefits management tools and methods is generally related to a common understanding of those representatives involved in the effort. They are typically healthcare professionals with little or no experience with benefits realization management. However, to increase benefits realization, means identifying potential benefits and manage the process. Thus, knowledgeable representatives are key. For health care professionals to become knowledgeable they must learn and experience from the process. Our approach to learning and knowledge is based on how individual knowledge is central in the organizational learning [15].

The research question for our study is: How can organizational learning affect complex benefits realization?

2 Theory

This section introduces benefits management [16] and organizational learning theory [17] as appropriate analytic lenses for our study. Benefits management emphasizes organizational development and innovation, includes a wide range of potential benefits, and looks at what is appropriate for addressing the complexity in public sector relevant to explicit stakeholder foci. Organization learning theory states that, in order to be competitive in a changing environment, organizations must change their goals and actions to reach these goals. In the public sector, individual learning transforms into organizational learning when information is shared and stored in the organization memory in such a way that it influences rules, values, attitudes and actions.

2.1 Benefits Management Model

In the middle of 1990s, a process model of benefits management was developed through a research project in benefits management at the Cranefield School of Management Information System Research Centre (ISRS) [18]. With experiences from many organizations, this model has been extended and refined, and presented in detail in the book

to Ward and Daniel [16]; Benefits Management: *Delivering Value from IS & IT Investments.*

Working with benefits realization, trough the model to Ward and Daniel [16] is like an iterative process. The model emphasizes organization development and innovation and consists of five stages, with different activities related to each stage, illustrated in Fig. 1.
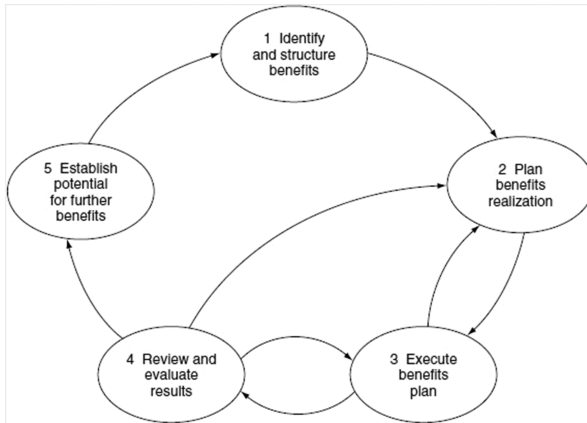
Fig. 1. Benefits management model [16, p. 105].

Ward and Daniel [16] point out that there is an inherent interdependency of benefits realization and change management in their approach and that is the reason why they call it Benefits Management. This state that it is not only about the implementation of technology, but also changes in the organizational processes, the roles and working practices individually or in team inside the organizations and in some cases outside the organizations. The term Benefits Management is defined by [16, p. 36] as: *"The process of organizing and managing such that the potential benefits arising from the use of IS/IT are actually realized"*.

Even though there are different models of the benefits management process, the main principles are often similar to the Ward and Daniels model [16] and their model has also been an inspiration for the Norwegian work in that field [12, 13].

It is important to understand the strategic context in which IT investments are being made [16], and for this reason, we state that the context for our research is municipal health organizations. A characterizing feature of public organizations is the diversity of different stakeholders and competing interests [19]. Unlike the private sector, the public sector must strive to develop services which can be used by everyone in the community [16].

A critical issue in enabling organizations to realize benefits from IT investments, is the ability of the organization to embed individual learning into organizational structures and routines [16]. During the benefits realization process, learning occurs on the individual level among the people that carry out the various analyses comprising the benefits

realization method. However, translating these insights into organizational learning does not happen automatically but require specific attention from the organization.

2.2 Organizational Learning Theory

Organizational learning occurs when individuals within an organization experience a problematic situation and inquire into it on behalf of the organization. In order to transcend to the organizational level, learning that results from organizational inquiries must become embedded in the images of organization held in its members' minds and/or in the epistemological artefacts (e.g., the cognitive maps, memories or programs) embedded in the organizational environment [17]. Single loop learning adjusts the action, but not the objectives behind the activity. Double loop learning alters or rejects the established governing objectives and produces a major and fundamental change in the organization's mission. Double loop learning is thus closely linked to an organization's ability to develop and increase their performance, e.g. by realizing benefits from IS & IT investments.

Senge [20] points out that learning organizations engaged in systematic organizational development depend on five conditions for success. These five conditions are: (1) to facilitate personal mastery; (2) to create mental models; (3) to build a shared vision; (4) to develop group learning through good leadership; and (5) to engage in systems thinking. The idea is that the whole will be greater than the sum of the parts. This can be done e.g. by including employees in benefits realization and change management. Ownership to the process will facilitate individual learning, which can build group learning (project) and ultimately organizational learning.

Nonaka and Takeuchi [21] introduced the SECI-model which has become the cornerstone of knowledge creation and transfer theory, illustrated in Fig. 2.
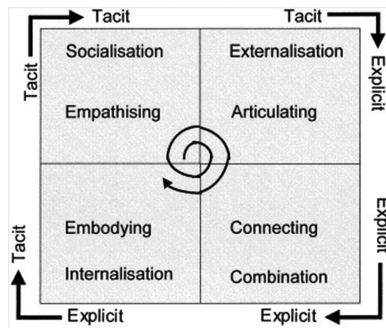

Fig. 2. The SECI-process [22, p. 12].

The four dimensions of the model – socialization, externalization, combination, and internalization – explain how tacit and explicit knowledge are converted into organizational learning. The first dimension, socialization, is explained to be the process of converting tacit knowledge through shared experiences like spending time together. When tacit knowledge is articulated into explicit knowledge it is called externalization,

who is the second dimension in the SECI-process. Explicit knowledge can be shared with others, e.g. in processes and routines, and become basis of new knowledge. The third dimension is called combination, and occurs when explicit knowledge is converted into more systematic and complex sets of explicit knowledges, and distributed to the members of the organization. Internalization is the fourth dimension, and happens when explicit knowledge created and shared in the organization is converted into individual tacit knowledge. When individual tacit knowledge is shared with others, it can start a new spiral of knowledge creation [22].

Organizations that share knowledge and experience contribute to innovation and learning across organizational boundaries and thus create benefits for one or more partners. Knowledge sharing is focused both on creating new knowledge, sharing knowledge, and applying knowledge. Sometimes knowledge sharing is perceived to be difficult to carry out. There can be structural, political, personal or cultural obstacles or barriers that must be overcome. Legislation can be such an obstacle for ICT in healthcare services.

To synthesize our brief review of the benefits management and organizational learning literature, we suggest that a benefits management model for improving benefits realization in an organization can be combined with organization learning. The first challenge is to properly understand the strategic context and conduct the activities of identification, planning, execution, reviewing, and establishing potential for further benefits. The second challenge is to move from individual learning to organizational learning. This challenge involves probing how organizations can take interpreted knowledge held by individuals and use it to change organizational actions/goals.

3   Method

Based on the research question a qualitative approach for data collection was considered most appropriate for this project. The purpose of a qualitative approach is to obtain a richer description of the problem setting and this approach is especially useful when investigating a phenomenon to which little prior attention has been paid [23].

Case study is one of the most important sources for theory development in social science [24], and can be seen as a non-proactive approach, who "study the phenomenon after the fact" [25, p. 326]. It is best suited when "how" or "why" questions are being sat and when focus is a contemporary phenomenon within a real-life context [26]. There are different definitions for this research method [27], and we apply the definition of case study by Eisenhardt [28, p. 534]: "*The case study is a research strategy which focuses on understanding the dynamics present within single settings*".

Based on the need for knowledge about benefits realization process, this project is designed as a single-case study, with an interpretive approach. We have followed the five components of case study research design proposed by Yin [26, p. 29] where the unit of analysis is the knowledge creation process in complex benefits realization setting, within a municipal healthcare context. Data is collected through participant-observation (see Sect. 3.1. for details about the role of the researcher), and field notes are analyzed

as an interactive process among the researchers with use of different interrelated elements illustrated in Creswell [29, p. 185].

3.1 Case Description

In 2015, one municipality in Norway, on behalf of two counties (made up of 30 municipalities), was asked by the central government to establish a Response Central for managing safety alarms and other sensors for recipients of municipal healthcare services.

After the business plan for the Response Central was developed and parallel to other important clarifications (i.e., how to cooperate with other municipalities in the region, and preparation for procurement), it was decided by the steering committee to focus on benefits realization. One of the researchers was given the task of managing the benefits realization process, hence referred to as the benefits realization process manager. As it was considered to be extensive and time-consuming to agree on a common benefits realization plan across the potential cooperation partners (municipalities), the initial aim was to develop a general benefits realization plan for one of the municipalities, with an intention to share the document with the cooperation partners as a starting point for them to manage benefits realization process in their own organizations.

Different methodologies for benefits realization were reviewed. The KommIT methodology [30] was considered by the benefits realization process manager to be the most transparent and useful for this project. This methodology is inspired by the work of Ward and Daniel [16]. Table 1 illustrate the different stages from the two stated methodologies and how they relate. The project is still running with only results from stage 1 and part of stage 2 of the methodology being completed.

Table 1. Overview of the stages for benefits management model [16] and KommIT methodology [30]

Benefit management model	KommIT methodology
1. Identify and structure benefits	1. Concept; identify and assess benefits
2. Plan benefits realization	2. Plan; plan benefits realization
3. Execute benefits plan	3. Execute; manage benefits realization during project
4. Review and evaluate results	4. Hand over; hand over benefits realization from project to operation
5. Establish potential for further benefits	5. Realize; benefits realization in operation

4   Results

During a three-month period, a number of activities were conducted following the KommIT methodology. This resulted in important and necessary discussions among key stakeholders. Several inputs were fruitful for benefits realization in this specific case, but the core discussion was related to the benefits realization process in general. It was the first time this specific methodology was used in this sector and the benefits realization process manager had no practical experiences with it in advance. Thus, the project was

dependent on and tried to strictly follow the methodology. Based on experiences to a given point in time, some minor changes were made to secure progress and maintain the schedule.

In the following, the purpose and challenges of the two stages will be outlined. Then, an overview of individual learning related to the stages from the perspective of the benefits realization process manager will be presented (Table 1).

4.1   Stage 1 - Concept; Identify and Assess Benefits

According to the KommIT methodology, the purpose of this partial stage is to analyze potential benefits linked to the specific ICT-project. What kind of positive effects can the municipality expect? Will there be changes in work-processes? Who are the stakeholders? Are the changes sufficient to justify the project?

One of the main challenges in managing this stage was related to stakeholders' insecurity about the purpose for the benefits realization process. The decision to establish the Response Central was taken before the project were started and was the driver for this process. Some of the stakeholders expressed skepticism based on experiences from similar processes, where identified benefits and assumptions for savings have had a directly negative impact on their budgets without taking the necessary prerequisites into account. Questions like: "Is the process just a cover for justifying the investment" arose.

Given the skepticism in the organization towards change and the fact that the project affected several departments, all the units were invited to process for identifying benefits during this stage. Some of the stakeholders were concerned that this would be just another shadow process. However, it seems that all of the stakeholders were satisfied with the thorough review of the concept and the possibility of asking clarifying questions. This involvement led to project ownership and important stakeholders were identified. However, it seemed difficult to achieve the desired openness, due to a major stakeholder focus on prerequisites and emphasizing that the defined benefits merely showed a potential. Because of this suspicion, some vital information may have been held back.

4.2   Stage 2 - Plan; Plan Benefits Realization

The KommIT methodology next suggests that the planning stage purpose is to link identified benefits to specific targets, define measurement indicators, actions, and assign responsibility for benefits realization to stakeholders in the organization. This phase starts after the project is accepted based on the benefits analysis in the previous phase.

The principles underpinning the development of the benefits realization plan appear simple and easy to implement. Developing a benefits realization plan across different units within one organization was, however, challenging in praxis because the plan needed to be broadly accepted in the organization to ensure benefits realization. The stakeholders had different perspectives to the identified benefits. Some were only willing to pay attention to qualitative effects, like safety and service quality, but others were willing to discuss direct or indirect economic benefits as well. This may be related to organizational roles or professional background. Most of the identified benefits proved

to be qualitative as the organizational changes and ICT investment will affect the budget in a negative way the next years. In short term, this project will cost a lot of money, but in long term, the investment can help to prepare for the future challenges the healthcare services are facing. When it was experienced to be challenging in one organization with different units, developing the same plan for a consortium of organizations, thought to be the overall goal at the start, is obviously even more challenging.

Since this was the first time a benefits realization process was conducted systematically in the healthcare services in the municipality, there were no established structures for where to discuss and ask for advice throughout the process. The benefits realization process manager had to rely on the method and justify for stakeholders both "why focus on benefits realization in general" and facilitating the benefits realization process in the specific circumstance. General organizational guidance for managing processes like this would have been very useful in a project which involves several departments in one organization/across different organizations.

Table 2 summarizes the individual learning in the project based on experiences from stages 1 and 2 from the perspective of the benefits realization process manager.

Table 2. Individual learning from the KommIT methodology stages in Praxis

Stage	Individual learning from stage
1. Concept: identify and consider benefits	1. An agreement of purpose for the benefits realization process and the investment is critical. To communicate a clear problem understanding at the grass root level is needed
	2. A combination of competence (e.g. healthcare, technical and innovation) is necessary for modeling current and future work-processes
	3. Analyzing changes in work-processes and identifying benefits are important activities for stakeholder involvement and ownership of the benefits realization process and the project in general
	4. The identified benefits at this point outlines potential, and it is important to identify and be aware of the prerequisites
	5. Due to a constantly evolving project, stakeholder analysis must be seen as an iterative process
	6. A thorough stakeholder analysis is critical to ensure an adequate change management process and high degree of realization of the identified benefits
	7. If an action (here the Response Central) to a challenge is determined in advance, an analysis of benefits is a demanding activity due to the stakeholders' uncertainty about the motive for the benefits realization process
2. Plan: plan benefits realization	1. Organizational support is needed to manage a benefits realization process in complex projects and organizations
	2. A distinct unit for managing processes like this had been very useful in a project who involves several departments in one organization/across different organizations
	3. A benefits realization plan has limited value unless accepted broadly in the organization. This requires substantial effort

5   Discussion

Organizational learning capability is related to both organizational and managerial characteristics and factors that enable the organizational learning process [31]. Dimensions of a learning organization consist of: continuous learning, dialogue and inquiry, collaboration and team learning, systems to capture learning, empowered employees, connected organizations, and strategic leadership [32].

The issue of organizational learning has not been given explicit attention in the benefits realization literature. We argue that this is a major shortcoming and that organizational learning is instrumental in enabling organizations to realize benefits from their ICT investments. We consider organizational learning theory to be a valuable contribution to the benefits realization literature and propose that the practical benefits realization methods should incorporate mechanisms for organizational learning.

The individual learning outlined in Table 2 provides a good basis and can give input to necessary organizational learning. E.g. the need for a broad competence base when modelling processes in Stage 1 indicate that the organization should facilitate exactly this in future endeavors. Further, the expressed need for a distinct coordination unit in Stage 2 suggest that the organization needs to establish such a unit to support similar future efforts. Gladly, the organization in the present case are these days planning to establish a portfolio office, who will be responsible for coordinate and manage projects and help department managers to run processes like this. More examples of how individual learning can be transferred into organizational learning can be found in Table 3.

Results presented from this case can be seen in relation with three of the dimensions presented in the SECI-process [22]. The trigger for the knowledge creating process was the steering committee's focus on benefits realization, and the available methodologies (e.g. KommIT methodology) for running such processes in public sector provided by other organizations (internalization). The benefits realization process manager had some tacit knowledge and this were converted through shared experiences when stakeholders in the project spending time together through this process (socialization). The individual tacit knowledge gained from the process has in this paper being articulated into explicit knowledge (externalization). One part of this dimension is illustrated in Table 2, and another can be viewed in Table 3, where suggestions of how to transfer individual learning (tacit knowledge) into organizational learning (explicit knowledge) is presented. The suggestions to organizational learning from this case can be used for input to the portfolio office, and maybe be implemented in future projects and revised methodologies for benefits realization in public sector (combination).

In summary, we propose the following two additions to existing benefits realization methods: (1) Individual learning should be specified and (2) Individual learning should be translated into organizational learning.

Table 2 summarized the individual learning from the case. Table 3 illustrates how individual learning can be transformed into organizational learning.

Table 3. Examples of transferring individual learning into organizational learning

Stage	Individual learning from stage	Suggestions to organizational learning
1. Concept: identify and consider benefits	1. An agreement of purpose for the benefits realization process and the investment is critical. To communicate a clear problem understanding at the grass root level is needed 2. A combination of competence (e.g. healthcare, technical and innovation) is necessary for modeling current and future work-processes 3. Analyzing changes in work-processes and identifying benefits are important activities for stakeholder involvement and ownership of the benefits realization process and the project in general 4. The identified benefits at this point outlines potential, and it is important to identify and be aware of the prerequisites 5. Due to a constantly evolving project, stakeholder analysis must be seen as an iterative process 6. A thorough stakeholder analysis is critical to ensure an adequate change management process and high degree of realization of the identified benefits 7. If an action (here the Response Central) to a challenge is determined in advance, an analysis of benefits is a demanding activity due to the stakeholders' uncertainty about the motive for the benefits realization process	• Stimulate the organization to be adaptable to change • Communicate accurate and clear information at different levels in the organization • Use standardized methodology for project- and benefits realization • Ensure that persons involved in the project (in different stages and activities) have the right skills and competence for the tasks • Allocate sufficient resources, both human and economical
2. Plan: plan benefits realization	1. Organizational support is needed to manage a benefits realization process in complex projects and organizations 2. A distinct unit for managing processes like this had been very useful in a project who involves several departments in one organization/across different organizations 3. A benefits realization plan has limited value unless accepted broadly in the organization. This requires substantial effort	• Clarify roles and descriptions of who is responsible for change management, benefits realization management. This needs to be communicated and well known in the organization • Establish a unit for support and advise in such processes (e.g. a portfolio office)

6   Conclusion

This study explored the research question "How can organizational learning affect complex benefits realization?". Based on a qualitative case study of a complex benefits realization effort in a health care context, we derived several individual learning points based on the benefits realization process manager´s experiences. The nature of the learning points suggests that the organization would benefit from embedding these insights into revised practice in future benefits realization efforts or put another way; ignoring the individual learning would be likely to cause frustration and low

organizational performance in future efforts. On this basis, we suggest two contributions to the benefits realization methods: (1) Individual learning should be specified and (2) Individual learning should be translated into organizational learning. We used the case to illustrate how individual learning can be transformed into organizational learning.

7   Implications

Although it is developed several benefits realization tools for public sector, there is little evidence on the benefits realization process in practice [14]. This study highlights the process, focusing on municipal health- and care services. It also sees a benefits realization method in the perspective of organizational learning theory. The result can be used as a guide for enabling organizations to realize benefits from IT investments and how they can embed individual learning into organizational structures and routines. This project will hopefully lead to better benefits realization processes when implementing technology in practice, and to develop already existing benefits realization tools.

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Understanding the Complexity of Benefits Management in an Interorganizational eHealth Effort

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Abstract

Information and communication technology (ICT) is an intervention for the future provision of healthcare services and diverse types of technologies are being implemented. However, realizing the benefits of such efforts is challenging. Moreover, collaboration among organizations has become common, which increases the complexity level and making the benefits of ICT efforts even more challenging to realize. As benefits management (BM) practices have not been designed for complex situations, a deeper contextual understanding of BM practices is required. To address this issue, a case study was conducted in a Norwegian interorganizational eHealth effort. The results provide an overview of four central concepts describing interorganizational complexity, as well as organizational and external concepts that challenge current BM practices. The case study findings highlight the need for updated BM practices and provides three novel suggestions for improving BM practices in interorganizational eHealth efforts.

1. Introduction

Innovation has become a well-known phenomenon in public healthcare services, especially in relation to information and communication technology (ICT) [32]. As health organizations become increasingly dependent on the implementation of diverse technologies, this trend will likely continue [18]. Among others, Barnett et al. [3] have suggested that healthcare service providers will face service provision challenges in the coming years due to both an increased number of patients with chronic and comorbid diseases, in addition to lower work effort per inhabitant [3]. To be able to manage these challenges, the health sector needs to innovate their way of providing services [32].

The recent acceleration of ICT implementation in healthcare services has put forward an adequate effort in solving these challenges. eHealth efforts are expected to improve a patient's quality of life and contribute to the provision of efficient and effective services [5]. Although there is ambition and enthusiasm towards the use of ICT in healthcare services, realizing their expected benefits is difficult. As a result, studies have reported positive and negative effects related to these efforts [1]. To improve ICT implementation, several benefit realization tools adopted by practitioners exist for use by the public sector [17, 35].

Digitalization has caused rapid societal change, and there has been substantial growth among organizations collaborating to reach common goals [4, 14, 36]. However, these collaborations are challenging, where competing stakeholder visions, interprofessional relations, various forms of trust, political issues, and technical standards have been reported as obstacles [6, 16].

Although researchers have reported complex ICT efforts, the phenomenon is not yet well understood. Complexity is either mentioned as a consequence of interorganizational collaboration [13] or is briefly described without further detail [32]. Little research has been done to help understand the multi-faceted complexity of benefits management (BM) in interorganizational collaborative ICT efforts. As such, further research should be conducted [13, 21].

Furthermore, suggested BM tools and work methods [35] seem to disregard multidimensional contexts [13]. Though the world is changing, the models used for guiding complexity have not followed suit. Without a thorough understanding of complexity, it is difficult to improve existing BM practices.

The purpose of this study is to examine the multi-faceted complexity of interorganizational eHealth efforts and BM implications. Two research questions have been developed for this study, which ask:

1) What are the central complexity concepts in regards to interorganizational eHealth efforts?

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2) What challenges do the central complexity concepts introduce for the BM of interorganizational eHealth efforts?

2. Background and theory

Two types of theory are presented within this section. First, eHealth literature is described to provide an overview of the study context. Second, BM literature is introduced as a theoretical lens. The BM literature highlight benefits realization in ICT investments, including organizational development and innovations, and suitable for the public sector [35].

2.1. eHealth

The term eHealth is used widely in society. The World Health Organization defines eHealth as the use of ICT for health [37]. This definition is broad and can be seen as an umbrella term applied to different technological solutions used in healthcare specific contexts [5]. While telemedicine is the most cited term across countries, several terms and definitions explain the different areas of eHealth [12]. Telemedicine is defined by the European Commission as "the provision of healthcare services, through use of ICT, in situations where the health professional and the patient (or two health professionals) are not in the same location. It involves secure transmission of medical data and information, through text, sound images, or other forms needed for the prevention, diagnosis, treatment, and follow-up of patients" [11, p. 3].

Telemedicine solutions have been an integral aspect of hospital service provisions for several years [28], but studies also have examined projects conducted within primary health services [34]. The health sector has high expectations for eHealth solutions [5]. For example, ICT is viewed as an intervention designed to meet the future challenges related to, among other factors, a changing demographic with an increasing number of comorbid disease cases [23]. As the volume of eHealth innovations continues to grow, related research can easily be found.

A 2017 study conducted by Askedal et al. [1] reviewed the effects of ICT on primary healthcare services from a public value perspective. Positive effects of ICT included improved work processes, improved health conditions, and patient empowerment. The study also identified negative effects of ICT, including increased workloads, negative changes in professional roles, and technical and usability issues. To summarize the research, both positive and negative effects related to eHealth efforts were documented.

In general, when public values such as citizen involvement, service improvement, and administrative

efficiency are at stake, the diverse interests of the involved stakeholders need to be balanced by the public sector [30]. In such a complex environment, managing and defending progress and decisions can be difficult when conflicting interests are present [26]. Efforts in eHealth are no exception. Defining, identifying, and involving stakeholders are crucial to eHealth development as they play a significant role in decision-making and in the adoption of new technology [22].

Stakeholders involved in eHealth efforts represent different institutional contexts, including multidimensional institutions. Dissimilarities among stakeholders, such as goals, tasks, competences, technologies, cultures, structures, systems, and power, do exist [32]. Thus, contradictions between professional roles within and across departments or organizations may occur [5]. However, literature pertaining to such complex efforts is limited [6], and more research is needed to provide a deeper understanding of how these collaborations can lead to success [14].

2.2. Benefits management

All organizations strive for sustainability, whether they are organizations in the public sector seeking to maximize their effectiveness or private firms looking to maximize their shareholder value. ICT has become instrumental in ensuring profitability and sustainability. However, such implementation is far from straightforward, and many organizations struggle to realize the intended benefits of ICT investments [9]. For BM to succeed, Ward and Daniel [36] have suggested to not only focus on the deployment of technology, but also pay attention to process changes, the role and work practices of individuals or groups, and the culture of the related organization. Failing to pay close attention to these organizational aspects is a factor responsible for the non-realization of benefits. For example, knowing the organization's culture allows managers to select the right management strategies, which in turn sets the foundation for successful changes [36].

Several methodologies and processes working to improve the implementation of ICT have been developed over the past 30–40 years. At the Cranefield School of Management Information System Research Centre (ISRC) in the United Kingdom, a BM process model was developed in the mid-1990s [35]. The model has been refined over the years and has built upon the experiences of several organizations [35]. Thus, Ward and Daniel has defined BM as "[the] process of organizing and managing such that the

potential benefits arising from the use of IS/IT are actually realized" [35, p. 36].

Several BM models have been adopted by practitioners [17] wherein the BM model [35] still serves as a reference of good practice [13]. The model is iterative and is comprised of various stages. In addition to focusing on ICT implementation, the model includes dimensions of organizational change and innovation that emphasize stakeholder involvement. The model also highlights the importance of those who take responsibility for planning the actions needed to realize the benefits, known as benefits owners. If no benefit owners are known, the literature suggests that the benefits will not be realized. This is because a lack of ownership indicates the aforementioned benefits are not wanted or credible [36].

Although the BM model is useful during the process of benefits realization, some work needs to be addressed in advance. The approaches to implementing ICT differ slightly and depend on the goal at hand. As issues pertaining to expected risks and change management strategies differ, improvement targets must be made clear and consistent. Before the benefits analysis of specific investments can be conducted, thorough strategy work must be completed. However, such work is carried out at the strategic level and is infrequently communicated to employees [25, 27, 35].

As a part of the initial strategy work, it is important to understand the strategic context of where ICT investments are made [35]. Although organizations may consider implementing the same ICT application, they may start from different points. Thus, organizations require different efforts to achieve the same benefits. Organizational strategies may also have an impact on the ways in which benefits are viewed. Ward and Daniel [36] argue that it is impossible to develop a generic set of changes and benefits for specific technologies.

Principles deriving from BM literature [35] are widely used in public and private sector models, but little research regarding how benefits realization processes occur in practice has been conducted [8]. However, some studies have investigated the outcome of such research. Paivarinta et al. [25] reported stakeholder complexity in the public sector and tensions between stakeholder groups (e.g., political contemporary priorities or longer-term priorities, qualitative or quantitative benefits) as issues facilitating the adoption and implementation of BM for IT investments. Coombs [7] studied the inhibitors and facilitators of realizing benefits for IT efforts. The outcome was divided into technically oriented factors, such as training, stable systems, and poor reports, and organizationally oriented factors, including organizational culture, lack of involvement, and user

engagement. Askedal et al. [2] presented insights from a benefits realization process within an eHealth effort where communication and the combination of competence, stakeholder involvement, organizational support, and organization acceptance were reported as individual learning of the process. The researchers concluded that agreeing on and developing a benefits realization plan in one organization is challenging, and developing the same plan for a collaboration of organizations is assumedly even more challenging [2].

Increased collaboration in this complex context could be related to the extensive growth in use and implementation of ICT [4, 21, 36]. However, the realization of benefits is challenging with the involvement of several organizations as each party may have different strategic starting points [36]. The increase in interorganizational collaboration seems to be unaffected by this challenge, and BM does not fit with the multiple facets of stakeholder complexity occurring in ICT efforts today [13]. To refine the BM model for current and future ICT efforts, more knowledge about this phenomenon is needed [13, 21].

3. Research approach

A qualitative approach was considered the most appropriate method for this project due to the nature of the research questions established. When investigating an unknown phenomenon, a qualitative approach is useful. This is because the purpose of a qualitative approach is to obtain a richer description of the case [19]. Moreover, case studies allow for a phenomenon to be examined within a real-life context [38]. As differing definitions of the term case study exist [15], Eisenhardt's definition has been applied to this study. It states that "The case study is a research strategy which focuses on understanding the dynamics present within single settings" [10, p. 534].

Responding to the call for research on interorganizational ICT efforts, the present study was designed as a single case study with an interpretive approach. Interorganizational complexity represents the unit analysis of this study, and how this influences BM in ICT efforts within the public healthcare context is examined.

To collect the data, 24 semi-structured interviews with key stakeholders from the presented case (see section 4.1 for details) were conducted from September 2017 to February 2018 based on a stakeholder analysis. An interview guide was used to address the following relevant themes: current and future health services (practice, technology, and telemedicine) and questions regarding the specific case (drivers, success, enablers and inhibitors, and experiences). The interviews were recorded, transcribed, and then inductively coded in

NVivo (guided by a qualitative methodology of first and second cycle coding provided by Miles et al. [24]). The interviews were first coded and were then organized into different categories to integrate them as part of a system. Finally, the categories were grouped into concepts for general and higher-level constructs [31]. Table 1 provides an overview of the respondents, including the attributes of the organization, the type of sector, and the role and number of interviews, demonstrating the multiple stakeholder levels.

Table 1. Overview of respondents.

Organization	Role (N)	Number of interviews
Municipality 1 (Public)	• Top manager (1) • Service/department manager (3) • Project manager/work package leader (2) • Advisor (1) • General practitioner (2) • Nurse/other healthcare professional (1)	10
Municipality 2 (Public)	• Top manager (1) • Service/department manager (2) • Project manager/work package leader (1) • Nurse/other healthcare professional (1)	5
Hospital (Public)	• Service/department manager (1) • Doctor (2) • Nurse/other healthcare professional (1)	4
University (Public)	• Service/department manager (1) • Project manager/work package leader (1) • Professor/researcher (1)	3
Technology Vendor (Private)	• Top manager (1)	1
Consulting Company (Private)	• Project manager/work package leader (1)	1
Total		**24**

4. Results

In this section the analysis results are presented. First, a description of the case is provided. Second, the central concepts of interorganizational eHealth complexity are presented in Table 2. Third, the results pertaining to BM challenges for interorganizational eHealth efforts are presented in Figure 1 and Tables 3 and 4.

4.1. Case description

Norway is a parliamentary democracy in Scandinavia with roughly five million inhabitants. The country is divided into three administrative levels: the state, 18 counties, and 422 municipalities. The healthcare system is semi-decentralized, where specialist care responsibilities lie with the state and are managed by a board of trustees. Funds for hospital care are allocated through a combination of block grants and activity-based funding. Municipalities are governed by local democracy, have freedom in organizing health services, and are responsible for providing primary care. Primary care is financed by specific-purpose and block grants from the central government and municipal taxes. General practitioners (GPs) have a key role as gatekeepers for patients, as GPs can access specialist care. Most GPs are self-employed but have contractual relationships with municipalities [29].

From 2016–2019, the Telemedicine Innovation Project (TIP) is evolving among several Norwegian organizations (Table 1). The goal of the TIP, stated in the project proposal, is "to test and evaluate a common telemedicine solution for remote monitoring of patients with chronic diseases or comorbidity among 30 municipalities, providing good healthcare services with less use of healthcare resources". This project is a continuation of a European Union project and developed for patients with chronic diseases such as chronic obstructive pulmonary disease, heart failure, type 2 diabetes, mental health issues, or a combination of these (comorbidity). Two municipal telemedical centers have been established, and municipalities select which patients to include based on defined criteria. The services provided by the TIP are individually customized and provided through a tablet, in addition to the different medical devices used remotely by the patient. Triage is triggered by the input of patient data (e.g., measurements and questionnaires). Depending on the outcome of the triage, different actions are performed by healthcare professionals located at the telemedical centers.

During the first two years of the project, an enormous effort has been put forward regarding the development of services and chosen technologies. However, the TIP has also experienced several challenges. These challenges were recently discussed in a workshop held for TIP stakeholders, and include fewer patients than expected, major delays, a lack of resources, and to demonstrate the socioeconomic benefits of the TIP. Based on a pre-analysis of the

collected data, interorganizational complexity was identified as an unexplored inhibitor of benefits realization. Because of this, the TIP is an excellent case for the examination of complexity in interorganizational eHealth efforts. Furthermore, how complexity affects BM can also be studied through this case. The project is still in an early phase, and thus, there is time to adjust the strategy for ensuring benefits realization.

4.2. Central concepts of complexity in an interorganizational eHealth effort

Table 2 outlines the analysis results of the present study. These results address the following research question: What are the central complexity concepts in regards to interorganizational eHealth efforts?

Table 2. Central concepts of complexity in an interorganizational eHealth effort

| Concepts	Concept categories	Quotation Example
Collaboration structure and strategy	Strategy: • Collaboration objectives (good healthcare services, less use of healthcare resources) Structure: • Decision authorities • Equal service provision across organizations • Juridical clarifications • Collaboration contract • Project design (schedule, structure, tasks)	• *We'll find good services for citizens and for employees. We'll find sustainable services, and we'll try to find services that don't make it more expensive for either municipalities or citizens (#1)* • *It is a challenging project because we didn't define tasks and responsibilities clearly at the start…concretized what this should be and also possible sources of error (#14)* • *It's a point to have equal service provisions, I think, which we must agree on in the TIP (#11)*
Collaboration culture	• Collaboration climate (early conflicts, some distrust, improving at present) • Individual characters (enthusiasm and ownership, seeing healthcare services beyond own organization, some feelings of inadequacy) • Various perspectives regarding key concepts (e.g., telemedicine, TIP technology, benefits realization, success, inclusion criteria for preventive or decisive needs) • Individual and interorganizational learning	• *This project may have been a bit cluttered… constantly affected by human irrationality (#10)* • *You got three different cultures on how to manage a project, thoughts about how a project should be, thoughts about what is seen as a successful project, how to measure the project and such things. It is a very big challenge (#1)* • *It's about learning from what we do, so that not everyone has to start from scratch. We must learn from each other constantly and build it forward (#6)*
Collaboration technologies	For health service provisions: • Patient data needs to be managed • Exchanging patient data across organizations/service levels • Lack of system integration • Uncertainty and vulnerability regarding TIP technology responsibility and logistics For project activities: • ICT tools for project collaboration across organizations	• *A challenge to telemedicine, which we have not yet fully understood, is that it will generate a bunch of data that we didn't have before which someone must deal with. Who is going to do that? (#2)* • *Now we see clearly the possibility for interaction and sharing of information…how weak we are...and that is a prerequisite to get the improvements we are aiming for (#18)* • *Technology logistics are a challenge; the end-user needs equipment. They have a tablet and measuring devices, and maybe training. Who will take care of it? (#19)*
Collaboration management	• Perception of ambition and complexity • Project progress (several dependencies, time-consuming processes) • Stakeholder involvement • Communication (e.g., purpose of the project, external advertising) • Resource management (heavy workload, turnover) • Support and empowerment • Clear and authoritative leadership • Economy (more organizational economic efforts than expected)	• *There are many cooks in the kitchen… that is my impression. Can we soon agree about anything at all, good—but it is insanely resource intensive (#4)* • *We need clear leadership in such a complex project…to pull everyone in the same direction and to be clear about the purpose of the different work packages. If not, we may end up with work packages running their own race (#7)* • *Some project funds should have been allocated to operations. There are millions, and if you want this to succeed, you have to prioritize something for operations as well (#21)*

4.3. Challenges of BM in an interorganizational eHealth effort

The second research question of this study asks: What challenges do the central complexity concepts introduce for the BM of interorganizational eHealth efforts?

This analysis revealed that the concepts of complexity identified for the TIP affect the degree to which the goal will be realized. The analysis also showed that concepts were influenced by the organizations and units which the TIP stakeholders represented and vice versa. Further, the different organizations represented within the TIP, along with the TIP itself, were influenced by external concepts and vice versa. This has led to project challenges, horizontal between organizations and vertical between e.g. organizations and the interorganizational eHealth effort.

Bringing about external and organizational concepts expands the already complex BM situation (as outlined in Table 2) for an interorganizational eHealth effort. However, the inductive analysis of the present study has identified these concepts as fundamental for understanding the complexity of BM. Figure 1 gives an overview of the identified external, interorganizational, and organizational concepts, including an illustration of the vertical and horizontal impacts and tensions that introduce BM challenges.

As seen in Figure 1, related concepts identified in interorganizational eHealth complexity (e.g., collaborative culture) are also present in single organizations, including their units (e.g., culture). External concepts are different from organizational and interorganizational concepts to some extent.
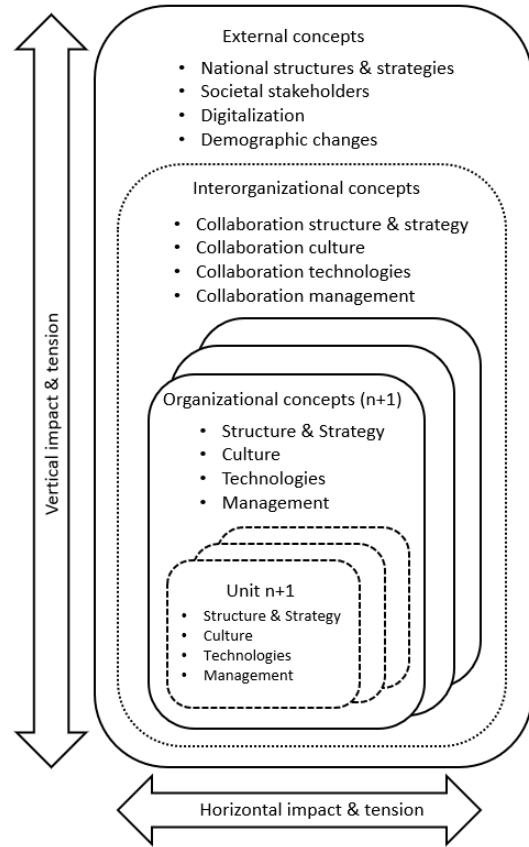
Figure 1. The context of BM in an interorganizational eHealth effort

Tables 3 and 4 provide an overview of the organizational and external concepts identified in the TIP, as well as some examples of challenges the complexity concepts introduce for BM in the TIP.

Table 3. Organizational concepts that challenge BM in an interorganizational eHealth effort

Concepts	Example of challenging categories	Quotation Example
Structure and strategy	Criteria for providing healthcare services differ across organizations and are not necessarily aligned with the criteria for the inclusion of TIP patients	*Talking about structure…The management in the organization says: that's how we should do it, and that's how it works. Period. But then, you have project managers who disagrees…It is really difficult for us…I cannot do something that my employer or manager disagrees with, right? There will be a conflict of interest (#13)*
Culture	Project fatigue and resistance to change	*I have occasionally felt annoyed at everything…sometimes I want to say that it was so much easier to keep on with operation without this (ref. TIP) extra! (#21)*
Technologies	Diverse types of electronic health record (EPJ) and patient administrative systems (PAS) across organizations	*We have no experience with technology like the one used in the TIP…so it must be customized to our EPJ, both the layout and its usability (#23)*
Management	Anchoring in own organization	*Anchoring in own organization and definition of roles can never be defined enough…managers need to know for future large-scale projects that it will take a lot of resources (#15)*

Table 4. External concepts challenging BM in an interorganizational eHealth effort

Concepts	Example of challenging categories	Quotation Example
National structures and strategies	Democracy challenges equal service provisions across organizations Semi-decentralized healthcare systems challenge collaboration and prevent sustainable telemedical services	*Think about the democracy. We choose politicians. Who decides? Yes, politicians. So, if you think that you can get all those politicians to think the same…I don't think so, because it's actually a part of our democracy…do you see how difficult it will be? (#14)*
Societal stakeholders	The TIP is dependent on patients and municipalities in the region to realize project goals	*How to recruit, where to pick up the patients? If we don't reach the patients, then it's unsuccessful (#9)*
Digitalization	Competing technologies and services are developed and provided parallel to the TIP, which challenges attention among societal stakeholders	*When the data revolution came, it was not necessarily the solution one thought would come that came… It can make things come from commercial hold that trumps slightly what we do in public (#9)*
Demographic changes	Citizens have increased expectations for healthcare services, which may challenge the level of perceived service quality and effective services	*New expectations, new tasks…we have to hang out with everything…new technology and all new within patient treatment…It's quite demanding to stay up-to-date on all fields at all times. It's almost impossible (#23)*

5. Discussion

In this section, the analysis is discussed through the theoretical lenses of eHealth and BM and are then applied to the research questions.

5.1. Central concepts of complexity in an interorganizational eHealth effort

As shown in Table 2, four central concepts were defined by the inductive analysis, including categories of complexity within an interorganizational eHealth effort. The four concepts will be elaborated upon further in this section.

While it may sound simple to define, collaboration structure and strategy has been proven complex. Several obstacles may occur when partners representing different aspects of a service chain collaborate [5]. Due to space limitation, only one example from the TIP will be given. The TIP's intended collaboration strategy of providing good healthcare services with less use of healthcare resources aligns with the general purpose of implementing technology as an intervention for future service provisions [23]. However, previous research states that different organizational strategies view benefits in varying ways [36], and balancing public values such as quality and efficiency is a possible challenge [30]. Similar findings have also been identified in this case as the TIP organization collaborators represent different parts of the Norwegian healthcare system, and diverse views and roles are thus held. In particular, good healthcare services are a naturally focus in the TIP, as healthcare professionals are responsible for developing

telemedical services. As suggested by Askedal et al. [29], a combination of different competences could be the solution for balancing different values when designing future interorganizational healthcare services.

Collaboration culture seems to grow in complexity when considering the number of collaborative organizations and units within the TIP. As each organization consist of individuals, each stakeholder is a participant in the existing collaboration culture. However, individuals may be influenced by their organization or unit in regards to their values and perspectives, which can ultimately impact their personal behaviors and reflections. Coombs [7] points to the importance of organizational culture in the success of BM. In contrast, Ward and Daniel [36] emphasize the identification and involvement of stakeholders during the whole process, but place less importance on organizational culture.

To succeed with benefits realization in an interorganizational eHealth effort, the present analysis identified collaboration culture as a central concept and implicit aspect of the organizational culture for which the stakeholders represent. Further, the analysis data demonstrates various perspectives regarding key terms such as benefits realization, success, and technology. These varying perspectives have caused misunderstandings and time-consuming discussions during the project. One example of this was the perception of the term "telemedicine" [11]. Individual experiences combined with organizational affiliation played a role in how stakeholders defined this specific term. Based on the perception of this simple term, other more important sub-categories led to different perspectives (e.g., the type of patient

groups suitable for the TIP, the inclusion criteria, the level of competence at the telemedical center, and the level of service provisions). Differing benefits and success expectations among collaboration partners are also reported in previous research [21, 27]. Based on this and the TIP results, identifying stakeholders' perceptions of key terms is relevant for avoiding potential misunderstandings.

Collaboration technologies are used for two purposes in the TIP. The first purpose of collaboration technology is to provide health services with technological solutions to be used by patients and healthcare professionals in telemedical centers. Previous research has described the identified categories of healthcare service technologies [1, 16, 32], and this study support these findings. Although this is well-known, it is still a central concept of complexity that must be managed when considering interorganizational eHealth efforts. The second purpose of collaboration technology is for the communication and handling of project documents across organizations. This type of technology plays an important role in project progress but seems to be forgotten when a collaborative project is begun across multiple organizations.

Collaboration management is an important and demanding concept of interorganizational eHealth complexity. Most of the categories related to this concept have been previously established by studies investigating single ICT efforts [22, 26]. These categories demonstrate a comprehensive effort to manage, and thus increase, the knowledge, skills, and updated tools required for understanding such complexity. Although most categories are already known, a new category has emerged from the present study: external advertising and the sale of public services (the TIP). To reach its intended goal of a common telemedicine solution among 30 municipalities, the TIP depends on municipalities in the region for buying telemedical services from the telemedical centers. This task requires marketing skills, which is an unusual communication method between public organizations.

Retrospectively, the central concepts of complexity can be identified among different research contexts and disciplines [21, 32]. However, Table 2 provides a detailed explanation of the central concepts, including the categories of complexity that have emerged specifically from this case study. In addition to understanding these concepts separately, each concept has an impact on the other concepts, and should thus be evaluated in relation to one another. As such, Table 2 contributes to the limited literary resources regarding complex ICT efforts [6]

and provides the foundation for better understanding BM in such contexts.

5.2.   Challenges   of   BM   in   an interorganizational eHealth effort

Tables 2–4 present overviews of the concepts and examples of challenging categories from an interorganizational eHealth BM context. Further, Figure 1 illustrates how external, interorganizational, and organizational concepts influence each other vertically and horizontally. In sum, this image helps to reflect upon and further understand why BM in an interorganizational eHealth effort is challenging and can be seen as the main contribution for answering the second research question. Because of space limitations, only one example of a combined vertical and horizontal challenge will be given to demonstrate the complexity of BM in the TIP.

The TIP collaboration structure consists of a steering committee, a project group, and different work packages. It is natural to think that the steering committee is the main decision-making authority in the TIP, which aims to test and evaluate a common telemedicine solution for remote monitoring of patients with chronical diseases or comorbidity among 30 municipalities, providing good healthcare services with less use of healthcare resources.

As telemedical centers provide TIP services to real patients, juridical clarifications about who is responsible for the services occur. The structure that deems the steering committee to be the primary decision-making authority in the TIP is challenged by collaborative organizations that actually provide the telemedical services. For this challenge, organizational structure and strategy plays a significant role. Criteria for how, and to whom, healthcare services are provided in each municipality can differ depending on the organizational strategy, economy, and local politicians. This category is further affected by external national structure and strategy related to the Norwegian healthcare system, where municipalities have the freedom to organize and are responsible for providing primary healthcare services [29]. In turn, this challenges the thought of equal service provisions across all organizations. This brief example underscores the BM literature that points to the challenges of realizing unified benefits across multiple organizations with different strategic perspectives [36].

In the TIP, it seems almost impossible to realize the ambition of common praxis among organizations when democracy is part of the national structure. Stronger national governance or motivating incentives could be the key to creating equal service

provisions across all municipalities. However, there is no indication of change in national regulations at present.

BM literature underscores the importance of understanding the strategic context in which ICT investments are made [35]. Based on this example and the other identified concepts, paying attention to vertical and horizontal implications and tensions in interorganizational eHealth efforts is crucial. Though some concepts are beyond interorganizational control, it is essential to define realistic ambitions in advance to establish a reliable basis for entering the different steps in the BM model [35]. For identifying possible challenges in interorganizational eHealth efforts, Tables 2–4 provide a useful and systematic experience overview of this case study.

Ward and Daniel [36] argue it is impossible to develop a generic set of changes and benefits regarding specific technologies. The TIP and other interorganizational efforts challenge these thoughts through the collaboration of many organizations to meet one common goal [4, 14]. Based on the experiences of the TIP and the presented BM literature [36], reflections regarding whether it is realistic to develop a benefits realization plan across organizations must be made. Moreover, who are the benefit owners [36] of such contexts, and further, will they have the power to initiate the needed changes across all organizations? These reflections need further exploration.

To summarize, existing BM models lack multi-dimensional perspective. This study answers the call to explore and further understand the complexity of improving BM practices in ICT efforts. However, to refine the results further research is needed. A possible way of proceeding with this research is to deductively use theory that adjoins identified concepts e.g. from public administration or organization and management disciplines, such as governance networks [20] or institutional theory [33, 36]. Due to space constraints, these theories cannot be further explained in this paper.

6. Conclusion and implications

This study investigated the central complexity concepts and BM challenges in a Norwegian interorganizational eHealth effort. The results are based on 24 semi-structured interviews that are summarized in Figure 1 and Tables 2–4. The results demonstrate that a variety of concepts impact one another on both vertical and horizontal levels. As a result, these concepts challenge BM in the interorganizational eHealth effort examined.

This research has implication for both theory and practice. The results provide a deeper understanding of complexity, and also gives examples of why BM in interorganizational eHealth efforts is challenging. As such, this study contributes to the quest for gaining more knowledge on the multi-faceted complexity of BM in interorganizational ICT efforts [13, 21]. Despite these results, more research is required to improve existing BM practices. A possible analytic lens for further research could be governance network [20] or institutional theory [33].

Both the analysis results and the established challenges of the TIP highlight the relevant need for updated BM practices. Specifically, this research suggests that project management addresses the following three issues as an aspect of the initial strategy work:
1) Identify the key categories of the central complexity concepts based on the structure presented in Table 2.
2) Identify organizational and external concepts, including categories that are affected and challenged both vertically and horizontally based on Figure 1 and Tables 3 and 4.
3) Develop and agree upon realistic ambitions based on an understanding of the interorganizational BM context.

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Five Challenges for Benefits Management in Complex Digitalisation Efforts – and a Research Agenda to Address Current Shortcomings

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Abstract: Over the past decades a number of benefits realisation (BR) frameworks have been developed. The benefits management model (BMM) is considered to be the most widely adopted and is often seen as a reference for good practice in digitalisation efforts in single organisations. However, this literature provides little support for complex, inter-organisational efforts. This is problematic, considering that digitalisation increasingly involves multiple organisations. To explore this gap, we studied the phenomenon in a Norwegian inter-organisational eHealth effort. Based on a qualitative study involving 50 interviews, observations and document analyses, we identify five distinct challenges and suggest a research agenda with five propositions for benefits management in complex digitalisation settings that can be further explored and tested by other researchers. The challenges and propositions constitute novel insights into a poorly understood area and contain implications and directions that can benefit both researchers and practitioners working in similar contexts.

Keywords: Benefits realisation, benefits management, inter-organisational digitalisation efforts, societal benefits

1. Introduction

Information and Communication Technology (ICT) is a main ingredient in public service innovations that aim to generate societal benefits while supporting underlying public values (Ward and Daniel, 2012; Seemann, Dinesen and Gustafsson, 2013). Digitalisation may drive increased collaboration among organisations in both public and private sectors (Boonstra and de Vries, 2008; Gil-Garcia, 2012; Garmann-Johnsen and Eikebrokk, 2014; van Fenema and Keers, 2018). However, such implementation of digital technologies are not straightforward and organisations struggle to achieve the intended outcome of their investments (Doherty, 2014; Frisk, Bannister and Lindgren, 2015; Mohan, Ahlemann and Braun, 2016; Christensen, 2017; Askedal, 2019). A large proportion of ICT efforts do not deliver expected benefits on time and on budget (Flak, 2012) resulting in loss of profit for private sector and public sector failure to accomplish societal and political goals (Frisk, Bannister and Lindgren, 2015).

Many practical tools and methods have been developed for, and embedded in practice to guide organisations in the process of realising the benefits and increasing the value of ICT-investments (Lin, Pervan and McDermid, 2007; Hellang, Flak and Päivärinta, 2013; Ghildyal, Chang and Joiner, 2018; Burton-Jones and Volkoff, Forthcoming). A stream of research, the benefits realisation (BR) literature has evolved since the 1990s to describe how organisations can realise the business value of ICT investments and provide normative guidance in the form of frameworks and methods (Lin, Pervan and McDermid, 2007). Of the various streams of BR research, the Benefits Management Model (BMM) and research related to this, is widely considered the most influential (Waring, Casey and Robson, 2018). We therefor focus our study on this stream of research.

Elements from the BMM literature have been embraced by practice communities and selected by public entities to assist public digitalisation efforts in countries such as the UK, Australia, New Zealand and Norway (e.g., Hellang, Flak and Päivärinta 2013; Burton-Jones et al., Forthcoming). However, the different frameworks and methods do not offer guidance on how to facilitate inter-organisational digitalisation efforts that aim to realise benefits beyond single organisations or at the societal level (Flak, Solli-Saether and Straub, 2015; Lönn, Juell-Skielse and Päivärinta, 2016). Ward and Daniel (2012) state the realisation of benefits when multiple entities are involved is highly challenging, because they often represent strategically distinct starting points.

Furthermore, if the benefits of ICT investments are dependent on changes perceived as unachievable or highly problematic, the BMM advises against pursuing the related benefits (Ward and Daniel, 2012). In short, the BMM approach has been developed to support single organisations but provides no support for current organisational practices in the public sector concerning belonging to a network aiming to realise societal benefits through digitalisation efforts.

There is clearly a gap between currently available BMM frameworks recommended for and used in practice and the actual digitalisation contexts facing the practice community. Consequently, more research is needed, specifically to understand the impact of the BMM practices (Doherty, 2014) and to increase knowledge regarding the challenges of managing BR in complex, inter-organisational digitalisation efforts (Flak, Solli-Saether and Straub, 2015; Lönn, Juell-Skielse and Päivärinta, 2016).

Motivated by this gap our study explores the following research question:
What are the challenges of using BMM frameworks in inter-organisational digitalisation projects?

We study the problem by investigating BR in an inter-organisational project among both public and private organisations in Norway. In the Telemedicine Innovation Project (TIP), several actors, including municipalities and a hospital, sought to develop and implement novel, integrated healthcare services for chronically ill patients via ICT. While the overall goals were shared among the participants, there were tensions and challenges in the process of realising them, which makes the case useful for answering the research question.

We analyse the case using key concepts from the BMM literature (Ward and Daniel, 2012) to understand it and uncover the shortcomings of existing frameworks.

2. Related research

2.1 Benefits realisation in information systems research

When reviewing the history of the Information systems (IS) discipline, Hirschheim and Klein (2012) position benefits realisation as an extension of the IT evaluation literature. As pointed out by Frisk, Bannister and Lindgren (2015), the available literature of IT evaluation is extensive and thus too diverse to use as a basis for our research. Rather, we are focusing on one of the specific research streams related to IT evaluation, namely what is commonly referred to as benefits management (BM) or benefits realisation (BR). The BR literature is largely a response to recurring challenges related to implementation of ICT and the realisation of benefits from such efforts (Doherty, Ashurst and Peppard, 2012; Marnewick, 2017; Ghildyal, Chang and Joiner, 2018).

Recently, Waring, Casey and Robson (2018) provide an excellent overview of BR frameworks or classification schemes within the IS discipline, twelve in total. Five of the frameworks, as among them Active Benefits Realisation (Remenyi and Sherwood-Smith, 1998), Great IT Benefit Hunt (Farbey, Targett and Land, 1994) and Benefits Management (Ward, Taylor and Bond, 1996) are presented as independent and original contributions. Six of the remaining frameworks, for instance Benefits Dependency Network (Ward and Daniel, 2006) and the Benefits Realization Capability Model (Ashurst, Doherty and Peppard, 2008) build on the benefits management approach by Ward, Taylor and Bond (1996).

Although there has been a substantial amount of research on BR, there is disagreement as to whether BR practices improve our ability to realise benefits from IT investments (Peppard, Ward and Daniel, 2007) or not (Badewi, 2016). Despite this, BR approaches have been adopted in practice, where the Benefits management model (BMM) has been the most influential (Mohan, Ahlemann and Braun, 2016; Waring, Casey and Robson, 2018). However, few empirical studies on how the BM process occur in practice can be found (Doherty, 2014; Frisk, Bannister and Lindgren, 2015), especially from public sector (Juell-Skielse, Lönn and Päivärinta, 2017) and inter-organisational collaborations (Lönn, Juell-Skielse and Päivärinta, 2016).

Inter-organisational collaboration is increasing but the BMM literature offers little or no support for complex settings (Flak, Solli-Saether and Straub, 2015). The phenomenon of complexity is either only briefly described (Seemann, Dinesen and Gustafsson, 2013) or just mentioned as a consequence of inter-organisational collaboration (Flak, Solli-Saether and Straub, 2015). In a notable exception, Askedal (2019) explored complexity in an inter-organisational digitalisation effort and identified challenges such as tensions between participating organisations and external conditions (e.g. regulatory, financial and political structures). Although Askedal

(2019) contributes to a better understanding of the challenges involved, this research does not provide normative directions for how to address this pressing issue.

Thus, there is clearly a gap between existing BMM frameworks and the challenges facing practitioners. To address this gap, more knowledge is needed to understand the challenges of BM in inter-organisational digitalisation efforts (Lönn, Juell-Skielse and Päivärinta, 2016). Consequently, BMM literature (Ward and Daniel, 2006) is used as the theoretical foundation for this paper and key concepts from BMM are used as a basis for analysing the usefulness of BM in inter-organisational settings. The next section provides details about the key concepts in the BMM.

2.2 The benefits management model

The BMM literature has developed practical approaches to identify, define, plan, track and realise the benefits of IT investments. *Benefits management* is defined by Ward and Daniel (2012, p. 8) as 'the process of organizing and managing such that the potential benefits arising from the use of IS/IT are actually realized'.

Table 1 presents brief definitions of key concepts based on Ward and Daniel (2012). These key concepts are central for understanding the essence of the BMM literature and will later be used as an analytic lens for answering the research question.

Table 1: Key concepts from the BMM literature (Ward and Daniel, 2012, p. 70-73, 98, 107)

BMM literature key concepts	Definition
Business drivers	*Issues which executive and senior managers agree mean the organisation needs to make changes- and the time scales for those changes. Drivers can be both external and internal but are specific to the context in which the organisation operates.*
Investment objectives	*A set of statements that describe what the organisation is seeking to achieve from the investment. They should include a description of the situation upon the successful completion of the investment.*
Business benefit	*An advantage on behalf of a stakeholder or group of stakeholders. This implies that the benefits are owned by the individuals or groups who want to obtain value from the investment.*
Benefit owner	*An individual who will take responsibility for ensuring that a particular benefit is achieved. This usually involves ensuring that the relevant business and enabling changes progress according to plan and are achieved. Due to the need to ensure task completion, the benefit owner is usually a senior manager.*
Business changes	*New ways of working required to ensure that the desired benefits are realised. These will be the new, ongoing ways of working in the organisation – at least until the next change initiative.*
Enabling changes	*Changes that are prerequisites for achieving the business's changes or that are essential to bring the system into effective operation within the organisation. Enabling changes are usually 'one-off' activities rather than ongoing ways of working.*
Enabling IS/IT	*The information systems and technology required to support the realisation of identified benefits and to enable the necessary changes to be undertaken.*
Change owner	*An individual or group who will ensure that an identified business or enabling change is achieved successfully.*

A recent paper indicates that the challenges for realising inter-organisational benefits are already visible in the early phases of a project when *benefits are identified and structured* and *when benefits' realisation is planned* (Askedal, 2019). During these steps, The BMM model suggest that three questions are asked: *1) Why is the investment being made? 2) What types of benefits are the organisation expecting to achieve? 3) How can a combination of business changes and IT deliver those benefits?* (Ward and Daniel, 2012, p. 85).

The first question (*Why is the investment being made?)* addresses *business drivers*. These are strategic and often externally oriented, although they can also be internal. A *driver analysis* is suggested to identify and understand the reasons for change. When the business drivers are identified, the BM literature suggests that key stakeholders agree on *investment objectives*, which must address the business drivers and be expressed so that stakeholders will commit to them. When both business drivers and investment objectives are identified and agreed upon, the objectives should be linked to the drivers. If an objective does not link to a driver, it should be removed due to the challenges of developing a valid business case (Ward and Daniel, 2012). To help answer the second question (*What types of benefits are the organisation expecting to achieve?),* Ward and Daniel (2012) propose identifying the *business benefits* specific to individuals or groups by examining the investment objectives and identifying the type of improvements that will be gained if the objectives are achieved. Finally, the third question (*How can a combination of business changes and IT deliver those benefits?)* can be answered by developing a visual outcome map which builds a shared perception of the relationship between changes and benefits (e.g. a benefits dependency network - BDN). A BDN is a visual tool

to relate business drivers, investment objectives and business benefits to the required changes (both *business changes and enabling changes)* and have been used in recent studies (Coombs, 2015; Villumsen, Nøhr and Faxvaag, 2018). Based on the identified changes, the *enabling IS/IT* can be considered. This illustrates a key tenet in the BMM approach, namely, allowing organisational strategy rather than technology to be the driver of organisational change. The mapping process provides an increased understanding of dependencies between changes and benefits and serves as a reminder that the benefits will only be realised if the required changes are successfully implemented.

However, if necessary changes (business changes or enabling changes) are problematic or impossible to achieve, it is suggested that the dependent benefits are removed from the project, as they are seen as an investment risk (Ward and Daniel, 2012). Another recommendation is that a *benefit owner* should be assigned to each of the benefits, and *change owners* also should be assigned. The model recommends that both change owners and benefit owners be individuals. However, the roles should be owned by the organisation, because members of a project seldom can perform actions that enable the required changes or realise the benefits.

The project owner has the overall responsibility for getting a project to achieve its´ goals, but may choose to delegate responsibility for benefits to a distinct person – the benefits owner. Ward and Daniel (2012) state the importance of understanding the relationship and balance between the benefit owners and change owners. If change owners gain no or few benefits, they may not be prepared to put in the effort to make the changes required for realising the associated benefits. If this is identified at an early stage, such issues can be addressed by considering re-scoping or restructuring the project (Ward and Daniel, 2012).

3. Method

A qualitative research design was applied to explore our research question. Based on its nature, a single case study research design with an interpretive approach was deemed appropriate to explore BM in inter-organisational digitalisation efforts. Case analysis is frequently used in IS research (Orlikowski and Baroudi, 1991; Chen and Hirschheim, 2004) and allows technology to be studied in a natural setting. This enables an increased understanding of emerging phenomena and can facilitate theory building through observations of practice (Mueller and Urbach, 2017). More precisely, applying a case study design in this study allows us to gain an in-depth understanding of the emerging phenomenon of BM in inter-organisational settings and further, provide novel contributions to theory by suggesting propositions to extend the BMM literature to cater for inter-organisational digitalisation efforts. A single case study does not allow us to generalize the findings to other inter-organisational digitalization projects. We rather seek to utilize the case study's potential for analytic generalizability (Walsham, 1995; Flyvbjerg, 2006) as we develop a contribution to the BMM literature.

We selected an ongoing, inter-organisational project from the public health sector in Norway as our case. Overall, the Norwegian health sector is divided into specialist and primary healthcare. Regional boards govern the hospitals, which are financed by a combination of block grants and activity-based financing. Municipalities are responsible for providing primary health and care services to their inhabitants, financed by block grants and taxes. General practitioners (GPs) constitute the first line of health care. The majority of GPs are self-employed but have contractual relationships with municipalities and function as gatekeepers to specialist services (Ringard et al., 2013).

The project (TIP) involved three municipalities, a hospital, a university, a technology vendor and a consulting company. The project aimed to establish telemedicine services for chronic care patients in a region consisting of 30 municipalities. We used semi-structured interviews, participant observation and document analysis. Fifty semi-structured interviews with stakeholders were conducted by one of the authors between September 2017 and February 2018 (see table 2). The selection of informants was based on the stakeholder typology of Mitchell, Agle and Wood (1997) to determine key stakeholders. When the interviews were conducted, only two of the municipalities were actively participating in the project. Thus, our respondents only represent two of the three municipalities initially involved in the project.

An interview guide was developed based on the BMM literature (Ward and Daniel, 2012) to cover relevant themes such as current and future healthcare services (including practice, technology and telemedicine) in

addition to core aspects of the case (e.g. drivers, potential benefits, enabler, inhibitors, experiences and organisational changes). The interviews were recorded, transcribed and coded in NVivo by one of the authors.

Besides the interviews, field notes from participant observation were used, because two of the authors were directly engaged with the project and participated in regular project activities such as meetings, workshops and seminars. Finally, project documentation (e.g. a project charter, project directive) was analysed by one of the authors.

The evaluation of the empirical material was first used to create a coherent story line and overview of key events in the project. Next, we zoomed in on challenges related to BMM within and between the participating organisations. The analysis was discussed and refined through several discussions between all the authors. For this step of the analysis, a specific focus was given to the different versions of the project charter document and to 12 key interviews with representatives from participating organisations.

Table 2: Overview of interviews

Organisation/societal stakeholders	Sector	Role (N)	Number of interviews
Municipality 1	Public	• Top/service/department manager (8) • Project manager/work package leader (2) • Advisor (5) • Public health officer/GP (3) • Nurse/other healthcare professional (2) • Technical personnel/ICT (2) • Senior citizen council (1)	23
Municipality 2	Public	• Top/service/department manager (3) • Project manager/work package leader (1) • Advisor (1) • Nurse/other healthcare professional (2) • Technical personnel/ICT (1)	8
Hospital	Public	• Top/service/department manager (3) • Advisor (2) • Doctor (3) • Nurse/other healthcare professional (2) • Technical personnel/ICT (1) • Other (1)	12
University	Public	• Top/service/department manager (1) • Project manager/work package leader (1) • Professor/researcher (1)	3
Technology vendor	Private	• Top/service/department manager (2)	2
Consulting company	Private	• Project manager/work package leader (1)	1
Other		• User representative (1)	1
Total			**50**

4. Results

This section outlines the results from our analyses. First, we describe the case. Second, we identify practical challenges for managing benefits in inter-organisational settings using the key concepts from the BMM literature.

4.1 The Telemedicine Innovation Project – TIP

The Telemedicine Innovation Project (TIP) started in 2016 as a partnership between public and private organisations in an effort to develop new and innovative solutions addressing the expected challenges of future healthcare service provision. According to the project charter, the overall goal was: "To test and evaluate a joint telemedicine solution for remote monitoring and treatment of patients with chronic diseases or comorbidity among 30 municipalities, providing good healthcare services with less use of healthcare resources". Monitoring and treating patients via telemedicine represented a substantial change from the existing practice of face-to-face care and, thus, required service innovation. In addition, the TIP represented organisational innovation in that the distribution of service responsibility could be altered among the actors. For instance, a central aim was to prevent the exacerbation of chronic diseases and reduce hospitalisation, which might shift the care load away from hospitals and to municipal services.

The participants included three municipalities (responsible for offering telemedical services to patients with chronic diseases), one hospital (responsible for developing the triage and treatment protocols), one university

(responsible for research), one technology vendor (providing the telemedical solution) and one consulting company (responsible for project management in collaboration with one of the municipalities that is the project owner).

The participants developed standards for a *telemedical patient pathway* (i.e. enrolment, service initiation, follow-up and ending) and *treatment triage* for patients with chronic diseases (i.e. targeting patients with either chronic-obstructive pulmonary disease (COPD), heart failure, type 2 diabetes, mental health issues or a combination of diseases).

They also implemented and further developed the technology and infrastructure for telemedical services. This included a patient kit consisting of devices such as a blood pressure meter, glucose meter, pulse and oxygen saturation meter, scale and other technology (the device kit was tailored for different diagnoses) as well as a dedicated tablet which collected and forwarded patient measures to the telemedicine system. The tablet was also the interface for the patients' communication with health personnel (e.g. questionnaire, video chat).

A telemedical centre was established in each of the three municipalities to receive and display information from the remotely monitored patients. The centres were staffed by health personnel interacting with the patient both in planned, follow-up calls and ad hoc situations, for example in response to alarms triggered by deviating values from the devices or by questionnaire responses. Much of the two first years was spent on preparatory and developmental activities. The project was delayed by organisational challenges which will be described in the next section.

4.1.1   Case development and tensions

As the above description suggests, the TIP made substantial progress but also encountered several challenges. Initially, the hospital was the project owner. However, the municipalities considered this arrangement awkward, considering that previous experience suggested that telemedicine treatment would increase municipal costs and responsibilities and not lead to short-term efficiency gains for them. In addition, the enrolment of patients into the TIP triggered substantial tensions among the partners. The project's service design report stated that:

> *Citizens suffering from one of the defined chronical diseases can apply for telemedical services through the TIP. … The municipalities assess the application and by defined criteria set by the TIP, decide to include the patient into the TIP. Based on the patient conditions, the service is given as a preventive service or as a replacement for other municipal healthcare services.*

Discussions arose on the inclusion criteria for the patients and on who should define these. While the hospital was assigned the task of developing treatment protocols, their diagnosis-centred mode of working clashed with the municipalities' needs-based processes of assigning health services. This can be related to differences in the allocation of national funding for municipalities and hospitals. Moreover, the ambition to prevent the development of disease meant that health services might be offered to 'too healthy' patients, that is persons with no formal right to municipal care services. Discussions arose, for example regarding whether the hospital was entitled to make decisions on service allocation, which would impact other actors (the municipal partners), since these decisions would increase the municipalities´ service load, possibly beyond the boundaries of the project. After serious discussions during the first half of 2016, project ownership and management were transferred from the hospital to one of the participating municipalities. An external consultancy company was engaged to handle project management with the municipality.

> *We have actually lost one year…because the first year was spent on discussions that didn't produce any results. …At the same time, the trouble taught us a lot of things. It's not completely useless, but we didn't get progress in the work packages and in developing a telemedical patient pathway, defining inclusion criteria and enrolling patients that we should have had. …It is an exceptionally challenging project (manager, municipality 1).*

The shift in ownership and project management caused substantial delays in the project. The complex nature of the project caused several further challenges for the consortium related to the different perceptions of objectives and priorities. The analysis in the next section relates these challenges to core of BMM literature.

4.2 Analysis

We employ the key concepts from the BMM literature as introduced in Section 2.2, Table 1 to illustrate where challenges in the project emerged. The results of the analysis are summarised in Table 3. In one column, we present the official and formal handling of the various BMM aspects, and in the other, we account for how the various participants perceived and related to these. The analysis of the experiences led to the identification of five challenges.

The analysis revealed that the *business drivers* were mostly aligned among the TIP partners, even though some were more concerned about their own organisation (internal drivers) than societal (external) drivers. However, no practical challenges have been identified in relation to this concept.

The overall goal of the TIP, identified as *investment objectives*, has been unchanged throughout the project. However, the analysis revealed that the meaning of 'a joint telemedical solution' differed among the partners. Some interpreted it to be a joint way of providing healthcare services, and some interpreted it to be a joint technological solution (which was the originally intended meaning). In addition, there were varying thoughts about the priority of the objectives (good healthcare services, less use of healthcare resources) among the TIP partners. During the project, the investment objective of 'a joint telemedical solution' were difficult to fully achieve because it depended on factors outside the TIP's control, such as technical infrastructure across Norwegian healthcare provider.

There has been a strong focus and desire to realise *benefits* in the TIP, but practical work with benefits management has been lacking. A list of expected benefits was formulated in the beginning of the project and was revised in late 2018. Some of the expected benefits were formulated and related to a group of stakeholders at a societal or inter-organisational level, such as 'Cost-effective use of healthcare services' (hospitals, GPs, municipalities)'. Other expected benefits did not address any particular stakeholder group, such as the 'cost-effective management of ICT'. Defining business benefits at a societal and inter-organisational level has challenged the benefit ownership in the TIP. Furthermore, it has proven challenging to measure the 'cost-effective use of healthcare services across hospitals, GPs and municipalities' with the use of a socioeconomic analysis. The partners have a range of ways of reporting their services which require enormous effort in collecting and mapping the necessary information to cover the societal perspective of the expected benefit. In addition, the partners have divergent thoughts about when they expect the benefits to be realised – some within the TIP timeframe and others in a longer perspective, which have caused discussions.

> *Regarding benefits, it is important to not only focus on the benefits right here and now. We, both hospital and municipalities, must also think of the benefits which apply in the future. …If it's 'right here and now' that matters, I think the overall benefits won't be good enough (clinical staff, hospital)*

The head of the TIP steering committee was formally responsible for realising the TIP´s investment objectives, but no one is formally appointed to own each of the expected benefits. In practice, there is a lack of benefit ownership. The expectation apparently was that, when benefits were formulated at an 'abstract' level, everybody should feel ownership. However, when everybody is responsible, no one takes action. Only one informant viewed his organisation to be responsible for coordinating operational healthcare services and facilitating discussions among the healthcare providers necessary for understanding the patient pathway.

> *We must do this anyway – somebody must do the job. Somebody must coordinate the operation. … The discussions we have across and between municipalities and between municipalities and the hospital are really important for understanding the patient pathway (manager, municipality 1).*

It also proved impossible for the head of the steering committee to be responsible for ensuring the realisation of all expected benefits without identifying and empowering benefit owners in the participating organisations and at a societal level.

Table 3: BMM key concept analysis

BMM literature key concepts	Evolution of concept in TIP project charter versions	Perception among participants, as reflected in interviews
Business drivers	The overall drivers relate to the expected challenges of future healthcare service provision (imbalance of number of patients who need help and healthcare professionals available). **Changes during the project:** None	Most participants pointed to future challenges of service provision and think technology can assist with the provision of qualitative and effective healthcare services from a societal perspective. However, some of the informants focused on their own organisation.
Investment objectives	The overall goal was to establish a joint telemedical solution for patients with chronic diseases/comorbidity, providing good healthcare services with less use of healthcare resources. **Changes during the project:** None	The participants varied in their prioritisation, e.g. targeting chronic patients rather than high-demand patients, the weighting of service quality versus costs etc. The understanding of what a joint telemedical solution meant (technology solution or service collaboration) differed among the participants.
Business benefit	Expected benefits pr. 2018: 1) Cost-effective management of ICT, 2) Increased collaboration among healthcare providers of telemedical services, 3) Cost-effective use of healthcare services (hospitals, GPs, municipalities), 4) Patient empowerment and increased quality of life, 5) Increased competence of telemedical pathways in the region and 6) Experiences and models of best telemedical practice. **Changes during the project:** Reformulation of expected benefits in late 2018: e.g. from 'uniform ICT interaction…' to 'increased collaboration…'	The participants' focus was mostly on cost-effective services and, to some extent, increased quality of life for patients and building knowledge of and experiences with telemedical practice. The participants discussed benefits generally and were mainly concerned about the time perspective for realising expected benefits. Additionally, informants representing municipalities point out that the TIP must realise some benefits in its own organisation.
Benefit owner	The head of the TIP Steering Committee was formally responsible for realising the TIP's investment objectives. No one was appointed to be formally responsible for the benefits. **Changes during the project:** None	One informant saw their own organisation as responsible for coordinating operational healthcare services and facilitating discussions among the healthcare providers necessary for understanding the patient pathway. The others did not discuss ownership of the expected benefits but discussed them generically.
Business changes	The overall telemedical concept remained, but its concretisation in the telemedical patient pathway (enrolment, service initiation, follow-up, ending) necessitated changes in patient recruitment (criteria and processes), as well as in the service provision model (remote care). **Changes during the project:** None	The more concrete pathway description triggered tensions among partners, as there were divergent perceptions of how to select patients (disease vs. need), the allocation of gatekeeper/decision authorities (by project or municipalities?) and type of service (preventive service vs. replacement for other services).
Enabling changes	Six enabling changes within the TIP time frame are defined (e.g. develop service design and patient pathways, including procedures for recruiting patients from municipalities and hospitals, establish knowledge about the potential and prerequisites for the benefits realisation of telemedical services in operation). **Changes during the project:** Two new (cooperation agreement, enrolment of patients), one removed (test/evaluate technology and infrastructure across healthcare providers)	Informants were concerned about assorted elements of the prerequisites (enabling changes) within the TIP timeframe, such as how to enrol enough patients into the TIP. Additionally, some are pointing to one enabling change outside the TIP's control which is crucial for a sustainable business change across the TIP partners: the difference in the allocation of national funding for healthcare services to municipalities, hospitals and GPs.
Enabling IS/IT	Several IS/ITs are listed: telemedical solution including treatment triage, patient kit including tablet and devices for measurement, municipal health record, web portal for logistic management, machine learning and a self-help programme for mental health. **Changes during the project:** Some new (e.g. logistic management, machine learning).	The partners reflected on the TIP technology, especially related to machine learning (e.g. distrust among TIP partners about the motive for implementation) and the selection of the telemedical solution (e.g. tensions among TIP partners). Because the chosen telemedical solution was selected at an early stage of the TIP, it was a commercial, off-the-shelf answer without an innovation. Nevertheless, it still needed TIP customisation, which was time-consuming. However, the informants were more concerned about organisational issues than the technology.
Change owner	The operating service division in municipality 1 (project owner) is formally responsible for delivering the enabling changes within the TIP timeframe to the head of the TIP steering committee. **Changes during the project:** None	Some of the informants pointed to the disparate work packages in the TIP when addressing the responsibility for successfully achieving the enabling changes within the TIP timeframe. Most informants pointed to external stakeholders (outside the TIP's control) for the successful achievement of enabling changes.

The *business change*, identified as the overall telemedical concept (descriptions of how to enrol patients, which patients to include, healthcare provision through municipal telemedical centres), was defined as a municipal service and did not involve the hospital, except for enrolling 'their' patients (chronic diseases). The overall telemedical concept did not change during this project but caused the most challenges and triggered several tensions among the TIP partners.

> *This is a municipal service. Usually, municipalities cannot get involved in hospital services, and vice versa. … We don't talk about diseases in the municipality – they do it in hospital (manger, municipality 2).*

There is a missing link between the business change (which happens in municipal service provision) and the expected benefits at an inter-organisational level.

Enabling changes were identified in the project's documents to be six enabling changes within the TIP timeframe, both inter-organisational and organisational. The partners mostly focused on how to deal with issues such as enrolling enough patients into the project and including other municipalities in the region into the TIP. In addition, conditions outside the TIP partners' control were identified in the project's documents. For instance, the integration between the telemedical solution and the electronic health record was not pursued because there were ongoing national initiatives to resolve this. Several discussions among the participants highlighted the challenges that resulted from the financing system being separately handled for municipalities, hospitals and GPs.

> *What I think is the biggest threat for a continuation of the TIP is the financing system. … It is a lot of goodwill in municipalities, but you cannot just live on goodwill. You need appropriate incentives for it to work (manager, technology vendor).*

When the municipality started to offer additional services, it was not followed by additional funds from the project or government. While the participants knew that financing would become an issue after the project period, they also considered any action to change the current funding system to be beyond their control. However, the analyses suggest that enabling changes outside the TIP´s control are likely to hinder sustainable business changes by negatively affecting the realisation of business benefits and, thus, indirectly hindering the successful achievement of investment objectives.

Several technologies were needed for the provision of telemedical services in the TIP. These have been identified as *enabling IS/IT* and can be found at two levels (similar to the enabling changes): within the TIP's control (organisational or inter-organisational), such as municipal health records and telemedical solution, and out of the TIP's control, such as technology infrastructure across levels of healthcare providers. The main technologies have remained the same from the beginning of the project. While technology played a significant role in the TIP and there were some challenges, these obtained far less attention than the organisational issues among the partners.

> *TIP is not a technology project. It is an organisational project. … The challenge is not the technology – that is pretty straightforward (manager, consultant company).*

Still, our analysis points to the perception of enabling IS/IT as being out of the TIP's control, which led to the re-scoping of the project charter's formulation of benefits (from 'uniform ICT interaction…' to 'increased collaboration') and the understanding of the investment objectives. (The meaning behind a 'joint telemedical solution' changed from a joint technology solution to service collaboration).

The analysis has identified enabling changes and enabling IS/IT at multiple levels for sustainable services in a TIP. These two concepts provide the basis for *change owners* in the BMM literature, which addresses the need for identifying change owners in the TIP at the same levels. Our analysis confirmed this, as change owners have been identified both within and outside a TIP´s control. Moreover, the analysis identified uncertainty regarding change owners for enablers within the TIP.

> *There are so many involved, so who is responsible for what? (manager, municipality 2).*

According to the project documents, the service providing unit in municipality 1 (project owner) was responsible for achieving the project's enabling changes. However, the service providing unit did not have the ability to ensure that the identified business or enabling changes beyond their own organisation were successfully achieved. Some of the TIP partners mentioned the different TIP sub-projects as responsible for achieving enabling changes within TIP, rather than the formally responsible operative healthcare service provider. Besides change owners within the TIP, most partners pointed out the importance of external change owners for the successful achievement of enabling changes.

> *I think this project really highlights how it had been advantageous to be one healthcare service and not two. And that is a considerably different and greater discussion (manager, municipality 1).*

> *Well, it's not all you [TIP] can decide. You cannot decide that 30 municipalities should give preventive services. Sorry, that's not the world! …Think about democracy. We choose politicians. In the 30 municipalities, the citizens have chosen their politicians. Who decides? Yes, it's the politicians. … We have the same legislations, but there are interpretation possibilities (manager, municipality 2).*

The Norwegian statutory financing system is highlighted as a crucial enabler for sustainable telemedical services across healthcare providers (see enabling changes and business change). Concerning this, TIP partners indicated government or politicians, for example as appropriate groups of change owners with the power to address enablers that were out of the TIP's control.

5. Discussion

Our analysis revealed several practical challenges to the inter-organisational TIP project. These seem related to two of the three questions Ward and Daniel (2012) suggest are important for establishing a solid foundation for enabling the realisation of benefits:
Q*2) What types of benefits are the organisation expecting to achieve?*
Q*3) How can a combination of business changes and IT deliver those* benefits?

Challenges related to these two questions are indirectly affecting question *Q1) why is the investment being made?* This is because the scope of expected benefits (Q2) in addition to the premises for achievable changes, including prerequisites (Q3), set the conditions for the realistic achievement of the investment (Q1). When the intended investments involve more than one actor, the distribution of benefits and changes among actors need to be addressed.

In the following section, we discuss five challenges to the BMM literature and suggest propositions for each of the challenges. Finally, a summary of our contributions is provided in Table 4.

5.1 Challenge 1: Formulating the expected benefits

The BMM literature outlines the identification of expected benefits as an essential task initially in a project. This task should be linked to the investment objectives – all in the perspective of a single organisation as advantages specific to individuals or groups and formulated in a measurable way (Ward and Daniel, 2012). Our TIP analysis revealed a situation very different from the assumption in BMM literature. In TIP, most of the expected benefits were formulated either at a societal or inter-organisational level (e.g. the cost-effective use of healthcare services like (hospitals, GPs, municipalities) or without targeting any specific stakeholder group (e.g. the cost-effective management of ICT). In public inter-organisational digitalisation efforts, the production of societal purposes is often the shared, overall goal (Gil-Garcia, 2012; Lönn, Juell-Skielse and Päivärinta, 2016).

The formulation of expected benefits at the societal and/or inter-organisational level caused other challenging issues in TIP. The measurement of expected benefits at societal or inter-organisational levels was challenging due to variations in documentation practices among the TIP partners (e.g. diseases in hospitals vs. needs in municipalities). We also observed a lack of benefit ownership, possibly due to the nature of the benefits. As few benefits were directly linked to each of the participating organisations, the motivation to function as a benefit owner was limited. While the TIP partners acknowledged the importance of what they could achieve together, they struggled to see immediate benefits for their individual organisations. This situation hindered the progress of TIP. Consequently, we argue that it is critical to formulate expected benefits at the organisational level, in addition to societal and inter-organisational levels.

Proposition for overcoming Challenge 1:
1. The identification of benefits at the societal, inter-organisational and organisational levels is required to realise benefits at the societal, inter-organisational and organisational levels.

5.2 Challenge 2: Establishing ownership for expected benefits

The analysis of TIP data revealed limited ownership among the TIP partners concerning the expected benefits. The formal benefit owner of TIP was the head of the TIP steering committee. This is, to some extent, along the lines of existing BMM literature, suggesting that an individual person holding a high position (in the TIP and in his or her own organisation) should have this role. However, our findings suggest that this may not be sufficient in an inter-organisational project like the TIP. Despite a common agreement and motivation to contribute to the production of societal purposes, the TIP's partners are autonomous. The head of the TIP steering committee has limited influence over other TIP partners, as each is bound by his or her own organisational priorities and structures. TIP benefits, at least the economic ones, were largely expected to materialise on the societal level and certainly not within municipalities. This understanding resulted in low degrees of benefit ownership at the levels at which benefits were expected to be realised.

Proposition for overcoming Challenge 2:
2. Benefit owners at the societal, inter-organisational and organisational levels are necessary to realise benefits at societal, inter-organisational and organisational levels.

5.3 Challenge 3: Understanding necessary business changes

During the first two years of the TIP project, major challenges and tensions occurred that could have led to the termination of the TIP. Several tensions were triggered by the business changes and the telemedical concept, especially the part concerning the enrolment of TIP patients. These challenges were not discussed in the project development phase and were first acknowledged when the project neared the launching of the actual service. The TIP telemedical patient pathway was arguably a service innovation, as it intervened and changed healthcare organisations, structures, healthcare professionals and patient roles. Existing BMM literature does not examine business changes intervening in the multiple organisations required for ensuring the realisation of societal and inter-organisational benefits. Instead, the literature suggests removing benefits if changes are problematic to achieve, as problematic changes are seen as investment risks. Our case indicates that existing BMM advice is insufficient, as it will limit societal innovation initiatives, including the realisation of potential societal benefits.

Based on results from the TIP case, identifying and understanding the magnitude of necessary business changes is essential to inter-organisational digitalisation efforts aiming for the production of societal purposes.

Proposition for overcoming Challenge 3:
3. Identifying necessary business changes at the societal, inter-organisational and organisational is required.

5.4 Challenge 4: Understanding enabling changes

The BMM literature defines *enablers* either as prerequisites for sustainable service (called *enabling changes*) or the technology required for benefits realisation (called *enabling IS/IT*) in the perspective of single organisations (Ward and Daniel, 2012). The analysis of the TIP data revealed enablers at two levels: 1) within the TIP, either as inter-organisational or organisational enablers and 2) outside the TIP's control (e.g. the Norwegian statutory financing system or digital infrastructure).

TIP partners mostly focused on enabling changes within the TIP's time frame. Both enabling changes and enabling IS/IT were addressed in various ways within the TIP. The lack of head-on tackling of prerequisites outside the TIP's control limited the scope for sustainable business change and indirectly affected the achievement of the intended investment objectives.

For enabling sustainable changes to inter-organisational digitalisation efforts seeking to realise societal, inter-organisational and organisational benefits, it is necessary to identify and understand enablers at all three levels. For instance, a wide range of enabling changes at the organisational level has been listed in BMM

literature including such as training in technical devices and solutions and reallocation of budgets or resources (Ward and Daniel, 2006). Expanding the understanding of enabling changes to the inter-organisational level can be done by including elements which are identified to be essential for collaboration across organisations such as collaboration agreement and governance or infrastructure allowing information to be transferred between different technological solutions. Enabling changes at the societal level can be specified by identifying enabling and constraining conditions beyond the inter-organisational level.

Proposition for overcoming Challenge 4:
4. The identification of necessary enabling changes, including enabling IS/IT at the societal, inter-organisational and organisational level is required.

5.5 Challenge 5: Establishing ownership for enabling changes

The analysis of the TIP case revealed change owners at two levels: within the TIP and outside the TIP's control. There was uncertainty about the change ownership for enablers within the TIP. This also supports existing BMM literature which proposes to individually name change owners for avoiding uncertainty. In addition to change owners within the TIP, the TIP partners also point to change owners outside the TIP's control (e.g. politicians, government) and link them to enablers outside the TIP's control (e.g. the Norwegian statutory financing system). Following the suggestions of Ward and Daniel (2012) about individually naming change owners from operational services would still be too simple for digitalisation efforts that require changes also at societal and inter-organisational levels. Identifying change owners at multiple layers is needed. Based on the examples of inter-organisational and societal enabling changes given in previous section (challenge 4), an inter-organisational change owner can for instance be individuals pointed to responsible for developing an agreement for inter-organisational collaboration. Further, if allocation of national funding is decisive for sustainable service, the change ownership of this issue is out of organisational or inter-organisational control and requires involvement from specific stakeholders at national level to enable changes- which can be seen as change owners at societal level.

Proposition for overcoming Challenge 5:
5. Change owners at the societal, inter-organisational and organisational levels are required.

Table 4: Summary of challenges and propositions

BMM literature key concepts	Challenges of using BMM frameworks in inter-organisational digitalisation projects	Propositions to extend the BMM literature to cater for inter-organisational digitalisation efforts
Business benefits	C1: Formulating the expected benefits	P_1: The identification of benefits at the societal, inter-organisational and organisational levels is required to realise benefits at the societal, inter-organisational and organisational levels.
Benefit owner	C_2: Establishing ownership for expected benefits	P_2: Benefit owners at the societal, inter-organisational and organisational levels are necessary to realise benefits at societal, inter-organisational and organisational levels.
Business changes	C_3: Understanding necessary business changes	P_3: Identifying necessary business changes at the societal, inter-organisational and organisational is required.
Enabling changes/ enabling IS/IT	C_4: Understanding enabling changes	P_4: The identification of necessary enabling changes, including enabling IS/IT at the societal, inter-organisational and organisational level is required.
Change owner	C_5: Establishing ownership for enabling changes	P_5: Change owners at the societal, inter-organisational and organisational levels are required.

6. Conclusion

Existing BMM literature are designed to support BR practices within a single organisation. However, current digitalisation efforts typically involve multiple organisations. We have investigated this gap by exploring BM in a complex case involving many organisations from both the private and the public sector to obtain a thorough understanding of the actual problem. Consequently, we outline five challenges related to realising benefits in complex settings. We also propose five actions that should be seen as a research agenda to facilitate BM in complex settings. Our case is unique (e.g., conducted in a Norwegian health context, includes the specified range of key stakeholders representing multiple levels of public and private organisations, touches the specific structure of the allocation of national funding for healthcare services to municipalities, hospitals and GPs), and the concrete problems encountered are specific to the case. However, the natures of the problems identified,

connected to the non-optimally aligned distribution of benefits and changes across multiple actors, are more generic and allow us to generalize.

6.1 Implications for research

Recent literature emphasises that digitalisation efforts in the public sector are becoming increasingly inter-organisational (Gil-Garcia, 2012). Our study has illustrated that the BMM literature is not tailored for this reality. Consequently, more research is needed to develop existing BMM approach to meet current demands – or to develop entirely new practices to facilitate the realisation of societal benefits. Our five propositions can be seen as initial and tentative basis for such development.

To further the research on these challenges we recommend three directions for future research. First, in terms of methodology, a powerful approach that could be used to investigate all of these propositions is the comparative method, using qualitative comparative analysis (QCA) (Ragin, 1989; Marx, Rihoux and Ragin, 2014), because it was developed to validate propositions involving necessary conditions (such as those included in the propositions above). While a relatively new method in IS research, there are some good exemplars of the technique (Lapointe and Rivard, 2005). Second, in terms of theory, we recommend that researchers take advantage of multilevel theory (Klein, Dansereau and Hall, 1994), given that all the propositions involve the identification and analysis of levels. While multilevel theory presents longstanding concepts (Kozlowski and Klein, 2000), researchers should also be aware of new ways of theorising levels in organisational and societal settings (Mathieu and Chen, 2011; Burton-Jones and Volkoff, 2017). Third, in terms of topic, researchers should be aware that some of the propositions take the BM field into new topic areas that need to be developed in much more detail. In particular, the literature on BM tends to take an organisational perspective; however, our research has shown that the literature needs to go far beyond this to consider inter-organisational and societal dimensions if digital transformation projects are to achieve their potential.

6.2 Implications for practice

Our findings suggest that realising benefits in inter-organisational settings is more challenging than realising benefits within a single organisation. As existing frameworks of BMM are geared towards single organisations, these frameworks currently, at best, offer only limited advice for practitioners.

This study suggests five challenges and five propositions, pointing out issues of importance for BM in inter-organisational efforts. Even though we acknowledge the limitation of using a single case study approach, in this case a Norwegian eHealth effort including its variables that of contexts, stakeholders, regulations and structures, the identified challenges provide a useful understanding of potential problems consortia may experience when embarking on joint digitalisation efforts. This understanding can help prepare managers at different levels for what they are likely to experience. Our five propositions include practical advice related to each challenge that managers can consider, hence, avoiding serious problems in their inter-organisational digitalisation efforts.

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