HEALTHCARE PROFESSIONALS' EXPERIENCES OF THE IMPLEMENTATION OF AN eHEALTH SOLUTION

Lappeenranta–Lahti University of Technology LUT

Master's Programme in Industrial Engineering and Management, Master's thesis

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Examiners: Associate professor Jouni Koivuniemi

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ABSTRACT

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Healthcare professionals' experiences of the implementation of an eHealth solution

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Keywords: digitization in healthcare, digital care path, implementation

The goal in the digitalization of healthcare is to improve the quality and capacity of healthcare services and to impact rising healthcare spending. Although the role of digital services is thought to bring numerous benefits, the implementation of new services is often challenging. The aim of this study was to describe the challenging and promoting factors identified in the implementation of the electronic healthcare patient solution, the digital care path, from a professional's point of view. The aim of the research was to generate an understanding of the phenomenon and to find methods to support professionals in connection with implementation. The material for this qualitative study was collected by interviewing healthcare professionals who have experience in implementing a digital care path. The interview framework was built based on the literature review. The data was analysed using qualitative content analysis.

The largest user group of the digital care path was nurses. Several factors promoted and prevented the commitment of professionals to the new service. A jointly agreed development model, the use of participatory methods, communication and conducting operational change were key elements of success. The biggest challenge was resistance to change. In addition to the project team, both the middle level managers and the management of the organization played a significant role in the success of the implementation.

The results describe the introduction of a digital solution in a complex operating environment. The results can be used both in the target organization of the study and more widely in the implementation of various digital healthcare solutions. However, this requires knowledge of the operating environment in question.

TIIVISTELMÄ

Lappeenrannan–Lahden teknillinen yliopisto LUT

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Tuotantotalouden koulutusohjelma

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Terveydenhuollon ammattilaisten kokemuksia sähköisen terveydenhuollon ratkaisun käyttöönotosta

Tuotantotalouden diplomityö

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Terveydenhuollon digitalisoinnin tavoitteena on parantaa terveydenhuoltopalvelujen laatua ja kapasiteettia sekä vaikuttaa terveydenhuollon kustannusten kasvuun. Vaikka digitaalisten palvelujen ajatellaan tuovan erilaisia hyötyjä, on uusien palvelujen implementoiminen usein haasteellista. Tämän tutkimuksen tavoitteena oli kuvata sähköisen terveydenhuollon potilasratkaisun, digihoitopolun käyttöönotossa tunnistettuja ehkäiseviä ja edistäviä tekijöitä ammattilaisen näkökulmasta. Tutkimuksen tarkoituksena oli tuottaa ymmärrystä ilmiöstä ja löytää menetelmiä ammattilaisten tukemiseksi käyttöönottojen yhteydessä. Tämän laadullisen tutkimuksen aineisto kerättiin haastattelemalla terveydenhuollon ammattilaisia, joilla on kokemusta digihoitopolun käyttöönotosta. Haastattelurunko rakennettiin kirjallisuuskatsauksen pohjalta. Aineisto analysoitiin laadullisella sisällönanalyysillä.

Digihoitopolun suurin käyttäjäryhmä oli sairaanhoitajat. Useat seikat edistivät ja ehkäisivät ammattilaisten sitoutumista uuteen palveluun. Yhteisesti sovittu kehittämisen malli, osallistavien menetelmien käyttäminen, viestintä ja toiminnan muutoksen läpivieminen olivat keskeisiä onnistumisen elementtejä. Suurin haaste puolestaan oli muutosvastarinta. Käyttöönoton onnistumisessa oli projektiryhmän lisäksi merkittävässä roolissa sekä lähiesimies että organisaation johto.

Diplomityön tulokset kuvaavat kompleksisessa toimintaympäristössä tapahtuvan digitaalisen ratkaisun käyttöönottoa. Tuloksia voi hyödyntää sekä tutkimuksen kohdeorganisaatiossa että laajemmin erilaisten digitaalisten terveydenhuollon ratkaisujen käyttöönotossa. Tämä edellyttää kuitenkin kyseisen toimintaympäristön tuntemista.

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1 Introduction

First national strategy aiming to apply information technology to healthcare and social welfare in Finland goes back to 1995. At that time, citizen-oriented and seamless services were at the core of the strategy. These same principles are still an essential part of Finland's national strategy. (Vehko, Ruotsalainen, Hyppönen & Ilmarinen 2019, p. 26.) During the years, several regional projects have been launched for the implementation in the hospital districts and municipalities (Vehko et. al. 2019, p. 28).

Digitalization is one of the global megatrends, which are the drivers of change in the latest Finnish government program (Finnish Government 2021a). In the Programme for the Promotion of Digitalisation the objective is to support and encourage public authorities to digitalize their services by 2023. The program aims to increase the technological and digitalization capacity of the public sector, develop partnerships between private and public sectors together with supporting the end users in using the services nationwide. (Ministry of finances 2021.) In the healthcare and welfare sector the main goal is to "reduce inequalities in health and wellbeing, safeguard equal and quality health and social services for all, improve the availability and accessibility of services, ensure the availability of skilled labour, respond to the challenges of changes in society, and curb the growth of costs." (Finnish government 2021b.)

In June 2021, the Finnish parliament approved the government's proposal for a new social and healthcare law. The reform covers all public health and social services. In the reform the goal is to create a vast variety of services that are locally accessible. This includes digital services because they are expected to save costs, time and travelling. After the reform, the wellbeing services counties will be responsible for these services. (Finnish government 2021b.)

In the beginning of 2023 Finnish Institute for health and welfare produced a situational picture of the current state of digital health and social services in wellbeing services counties and the maturity of organizations to provide digital services. This situational picture offers new wellbeing services counties a tool that supports information management and helps in developing regional and national digital services. (THL, 2023.) The Sustainable Growth programme for Finland for the years 2021-2025 is EU funded program, which supports ecologically, socially and economically sustainable growth. The program aims to equalize social and health services and implement them in a multi-channel and accessible manner using digitalization. It targets to introduce new digital solutions and expand the implementation of cost-effective solutions. (STM, 2021 p. 14.)

In Finland, the information utilization strategy outlines the goals of digital transformation. The goal is that citizens can produce information themselves for use by professionals. The welfare data collected must be reliable and available nationally. Applications used by professionals should be usable and professionals should have the capability to use them. Customer and patient information should be available to both patients and professionals in an accessible format. This will ensure equality of services in sparsely populated areas and special groups. The information collected should be available in information management as well as in research, innovation, and business activities. (STM, 2016 p. 18.)

Rising use of digital technologies empowers the patients. Healthcare is seen as an industry where patients are actively involved in managing their own health, but the conflicts of interest in health information technology between patient and professional can have a negative effect to patient's wellbeing. The impact of Health Information Technology in disease progression shows benefits measured by two indicators; the average life expectancy and the expected total lifetime earned. They also have many different positive impacts on both patients and professionals. (Kraus, Schiavone, Pluzhnikova, Invernizzi 2021, p. 561.)

Aiming to meet all the objectives set in the health and social services reform, it is mandatory to decrease the expenditure on healthcare and increase the use of eHealth services. (Ministry

on finances, 2021.) At the same time, reaching these goals creates opportunities for business and exports. (STM, 2021 p. 14).

1.1 Background

The way we do things in healthcare is in abrupt change. As in many different fields of life, the cure is awaited to come from information technology, in more precise eHealth. eHealth means information, communication and sensing technologies enabled healthcare delivery and practice. (Sneha & Straub, 2017, p. 920) According to Sneha & Straub (2017, pp. 921-922), eHealth is a relatively young area of research. eHealth includes technological innovations in data processing and in communication and identification. The goal is to improve the quality and capacity of healthcare services and to impact rising healthcare spending.

The digital shift is affecting many areas of healthcare; in the role of the patient, benefit to patients and professionals, working practices, processes, and functions (Kraus et al. 2021, pp. 561-562). Finnish ministry of finances has listed guidelines to support "…the leap in productivity, user-orientation, and the primarily digital role of public services." These digitalization principles are commonly agreed to be applied in all public administration including healthcare and welfare. (Ministry of finances 2021.)

Even though we know the importance of digital transformation in healthcare, it seems difficult to implement new technology and to motivate patients and professionals to use it (Ciere, van der Vaart, van der Meulen-De Jong, Maljaars, van Buul, Koopmans, Snoeck-Storband, Chavannes, Sont & Evers. 2019, p. 9; Harvey, Dopson, McManus &Powell, 2015, p. 4; Kujala, Ammenwerth, Kolanen, Ervast, 2020; Sarkar, Karter, Liu, Adler, Nguyen, Lopez & Schillinger 2010, p. 192; Urowitz, Wiljer, Dupak, Kuehner, Leonard, Lovrics, Picton, Seton & Cafazzo, 2012). Limited adoption of the new technology by the patients and professionals is one example of implementation challenges faced (Fiks, DuRivage, Mayne, Finch, Ross & Giacomini, 2016; Sarkar et al., 2010, p. 192; Urowiz et. al., 2012).

To make the implementation of new technology successful, it is important to engage potential users. Normalization process theory introduces four components, that are considered generative mechanisms in implementing new complex practice: coherence, participation, collective action, and reflexive monitoring. (Mair & Finch, 2009, p. 540.) These also apply to implementing eHealth Services (Mair, May, O'Donnell, Finch, Sullivan & Murray, 2012, p. 360).

This thesis arose from the author's own interest. The author had the opportunity to present the idea of the thesis via her employer to health technology innovation ecosystem Clever Health Network steering group meeting in June 2021. Three companies showed interest in commissioning the work based on the idea presented. Later, two companies withdrew. The company ordering the work is Tietoevry, a Finnish software and service company that works in many different customer industries including healthcare and welfare.

1.2 Objectives and purpose of the research

The objective in this study is to describe the challenges and contributing factors related to the introduction of an eHealth patient solution from the perspective of a professional. The solution is a digital care path developed with My Path application. The purpose of the study is to produce understanding of the phenomenon and to find methods on how to support professionals in deployment efforts. The work will provide suggestions to support the implementation of a digital care path.

Tietoevry, the client of this work, has the right to resell My Path application in the Nordic countries. The work is seen as an important input into Tietoevry's strategy work in defining the best approach into this fast-developing business area. It will also provide information and tools for the company to support the implementation of customers' digital care paths in different healthcare units. In general, this is also an interesting and topical topic. Although this work examines the implementation of digital care path, the results can be widely used in various eHealth implementations. (Raitakari, 2022.)

The research will find answers to the following questions:

1. What factors challenge and promote the commitment of healthcare professionals to the use of eHealth solutions?

2. How and at what point in the implementation process do challenges emerge?

3. By what means is it possible to overcome the challenges?

4. How can health professionals be better supported in implementing eHealth solutions?

The study examined digital care paths in two different university hospitals. At Oulu University Hospital and Kuopio University Hospital. The material was collected through interviews after the organizations had granted research permits based on appropriate applications. Informants were selected by a discretionary sample of healthcare professionals with experience in implementing a digital care path.

1.3 Summary of theoretical background

The theoretical framework for the theses was built with a literature review the aim of which was to create a synthesis of previous research related to the phenomena of the implementation of digital services. This was carried out as a descriptive literature review. (Salminen, 2011 p. 3). Studies were searched from the LUT Primo database using the following keywords or their combinations: "health care", "digital health care", "digital transformation", "digitalization", "eHealth", "implementation", "lean", "service design", "change management", “service development” and “effectiveness”. By using different search words and their combinations, the goal was to find hits in a subject area where not a lot of research has been published. The search was limited to start from 2010 onwards. Studies were included or excluded first based on the abstract only and later also on the basis of the full text. The research was carried out as a qualitative case study that included interviewing healthcare professionals. The analysis was carried out using Normalization process theory (NPT) as a framework for analysis.

Digitalization, one of the global megatrends is changing healthcare (Finnish Government 2021a). It is seen to provide services equally to all citizens, improve the availability and accessibility and generate cost savings (Finnish government 2021b). Digital services can empower patients. It also significantly changes the way professionals work. (Kraus et. al. 2021, p. 561.) Implementing the new technology and engage the potential users has been difficult (Ciere et. al., 2019, p. 9; Harvey et. al., 2015, p. 4; Kujala et. al., 2020; Sarkar et. al., 2010, p. 192; Urowiz et. al., 2012) and because of this it is important to engage potential user to the implementation (Mair & Finch, 2009, p. 540). In this study, the normalization process theory is used to understand how complex processes can be transformed into functional ones while considering the related context. (May & Finch, 2009, p. 536). This theory is flexible to use. It has been used in several studies dealing with health interventions and digital health services. (May, Cummings, Girling, Bracher Mair, Murray, Myall, Rapley & Finch, 2018).

To succeed in the service development, it is important to use a systematic and formal process such as new service development (later NSD) along with other methods (Johnson, Menor, Roth & Chase 2000 p. 4-5, Kitsios & Kamariotou 2020, p. 692). Lean method is also widely used in healthcare change processes. Using lean can possibly assure lots of benefits (D'Andreamatteo, Ianni, Lega & Sargiacomo. 2015, p. 1206). Another method used is human-centered approach, service design, where the idea is to understand human experience and use that in creating better customer journeys (Sangiorgi, Lima, Patrício, Joly & Favini, 2019 p. 149). Designing the services is also important. According to the studies there is a connection between the design of the service and the success of the implementation (Granja, Janssen & Johansen, 2018). According to Yu and Sangiorgi (2018, p. 40.) NSD process could benefit of using design centric approaches. When implementing new services in healthcare it is important use segmentation (THL, 2021), because it supports the evaluation of effectiveness, and it could help to recognize those patients for which digital services are suitable (Riihimies et.al. 2020).

Implementing new technologies requires readiness from the organizations (Granja et al, 2018). For organizations to be successful, they must be able to streamline their operations

and adapt to external challenges by acting agilely. In addition, organizations want to operate on an ecologically and socially sustainable basis. (Cummings & Worley, 2005, p. 5-6). Workflows are in change, and this can provoke resistance (Granja et al, 2018). Change management is needed to succeed in this (Lauer, 2019 p. 4). According to the studies the change is most often challenged by the operational employees and the middle management. Resistance can occur in many ways and should be taken seriously. (ten Have, S. ten Have, W. Huijsmans & van der Eng, 2015. p. 45). Enabling digital transformation requires many different participants and a leader who gives dedicated support and has new vision and clear message. (Mugge, Abbu, Michaelis, Kwiatkowski & Gudergan, 2020, pp. 31-33.)

The digitalization of healthcare is expected to generate effectiveness and enable effectiveness to be measured (Finnish government 2021b), but both the measurements and the utilization of the measurement results is insufficient. Effectiveness can be measured by measuring health, quality of life, functional capacity, and costs at the customer level. Measurements should be done from three different perspectives: patient, professional, and clinical outcomes (Pitkänen, Haavisto, Vähäviita, Torkki, Leskelä & Komssi 2018) and they should be performed regularly, at all times, and on a patient-by-patient basis (Porter & Guth, 2012 p. 41). When choosing the metrics, the customers should be divided into segments (Pitkänen et al, 2018).

Previous research findings and models described above form the theoretical framework for this work (Fig. 1). In addition to these, the central theory in this work is NPT, which, when operationalized, forms the framework for the analysis of the data in the empirical part of the work. All these models and theories will be introduced in more detail in following chapters.

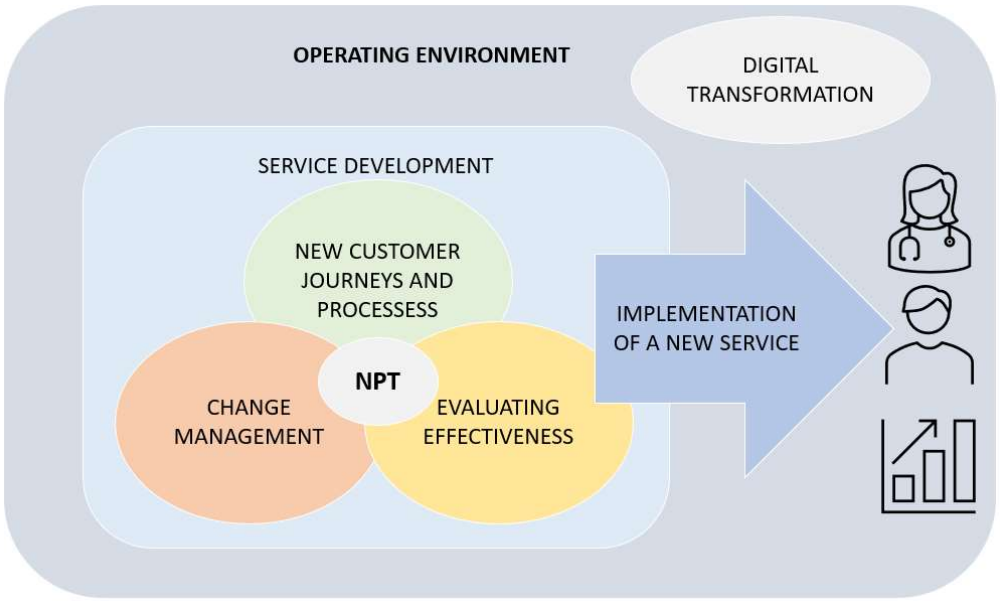

Figure 1. Summary of theoretical background.

To conclude, a formal service development process supports the successful implementation of a new service. The key elements of the process are change management, plan to evaluate effectiveness and a clear process. In this way, it is possible to achieve a situation where the service achieves the goal of digital transformation and provides added value to the patient, professional and organization.

1.4 Structure of the research

The thesis is divided into theoretical and empirical parts. The whole structure of the thesis is presented in Figure 2. The first chapter presents research objectives, purpose, and the structure of the research along with summary of theoretical background, which provides the theoretical framework for the theses.

Next four chapters introduce key concepts and models for the work. The second chapter gives on overview of the operating environment and presents a model and tools for service development and implementation. The third chapter presents change management and its role in digital transformation. The fourth chapter gives on overview of how to evaluate

effectiveness in healthcare. The fifth chapter presents the NPT that forms an operational framework for analysis phase.

The empirical part of the work starts by presenting My Path application. The seventh chapter presents the methodological choices in this research. Next, the results are presented and in the nineth chapter they are summarized and reviewed in relation to the theoretical background to draw conclusions and suggest further research. Finally the whole study is summarized.

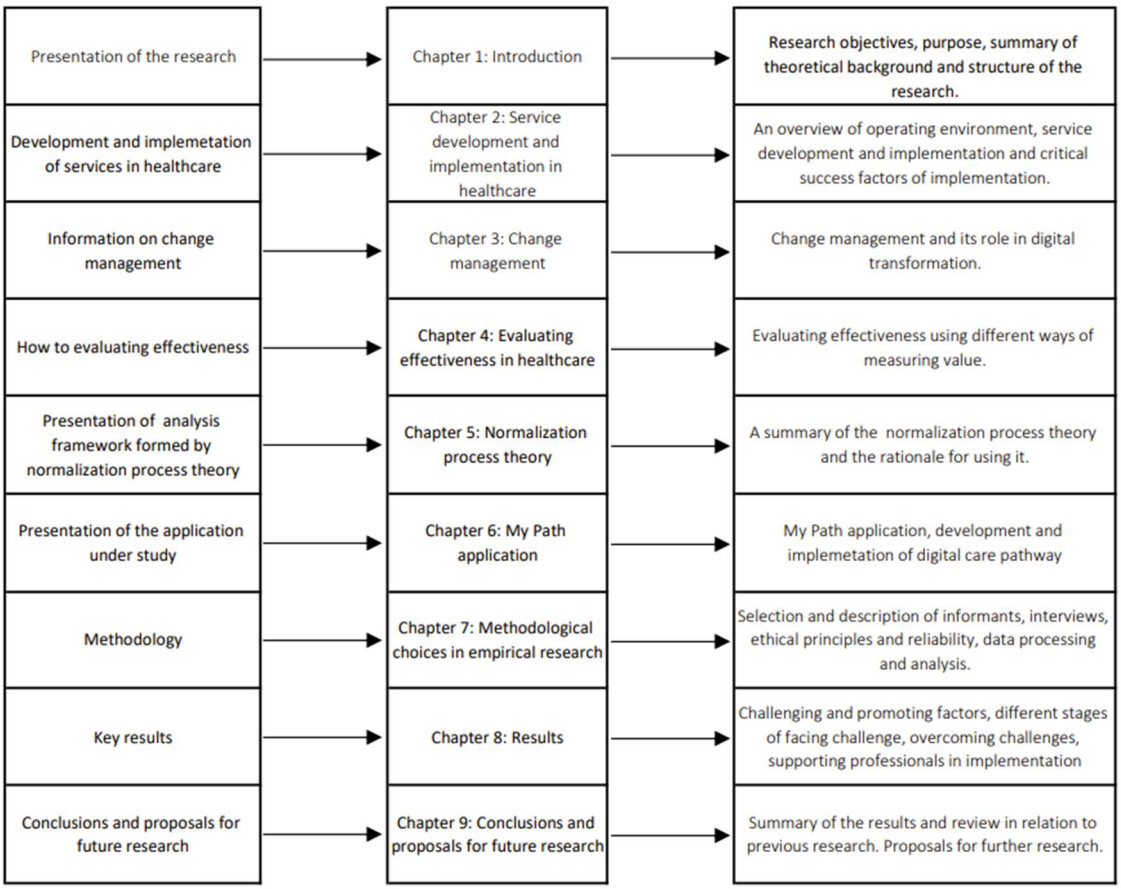

Figure 2. Input-output diagram of the structure of the thesis.

2 Service development and implementation in healthcare

There are several significant variables in the Finnish healthcare environment, for example the population and the size of the country, the current healthcare system and the health and social services reform (Erhola, Jormanainen, Kovasin, Rissanen, Keskimäki, 2020 p. 57). Lack of system integrations challenge the eHelath implementation, but the implementation of services is also challenging. Succeeding in service implementation requires getting to the center of customer processes. (Niemelä & Kivipelto, 2019 pp. 8-9)

2.1 Healthcare as an operating environment

In Finland, the population coverage of healthcare is good, but it is challenged by long distances and sparse population. The density of doctors is significantly lower in northern than in southern Finland, which inequalities access to treatment. There are more problems in accessing healthcare in Finland than in many other OECD countries. Dissatisfaction is especially caused by waiting times for access to treatment. (Warma-Lehtinen & Parviainen, 2021pp 24-25.)

Although there have been breakthroughs in eHealth, there is a significant gap between demand and availability in some areas and the services are not equally targeted. Also, professionals are not familiar enough with the potential of new eHelath solutions, and non-interoperable information systems cause dissatisfaction among them. (Erhola et. al. 2020 p. 57-58.)

Current legislation challenges the smooth flow of information because it requires the consent of the customer for his data to be transferred between registers maintained by different actors. In practice, this means asking the client for consent at various stages of treatment. According to a study commissioned by the AKUSTI Forum, this conflicts with the EU's general data protection regulation. They argue that the future solution should be based on a common controller and common filing systems in health and social services (Warma-

Lehtinen et al. 2021, 40-41). Legislation also defines the development and use of health technologies. The development and use of medical devices are governed by EU-level regulations and complementary national legislation. (Fimea, 2021)

2.2 New service development

New service development (NSD) is a development process used in following situations described by Johnson et. al. (2000 p. 2): "offering not previously available to customers, that results from the addition of offerings, radical changes in the service delivery process, or incremental improvements to existing service packages or delivery processes that customers perceive as being new.". There are similarities in NSD and service design, but when developing the service offering, NSD focuses on examining the overall process (Johnson et. al, 2000 p. 4). NSD has been simplified into four stages that are presented in Figure 3.

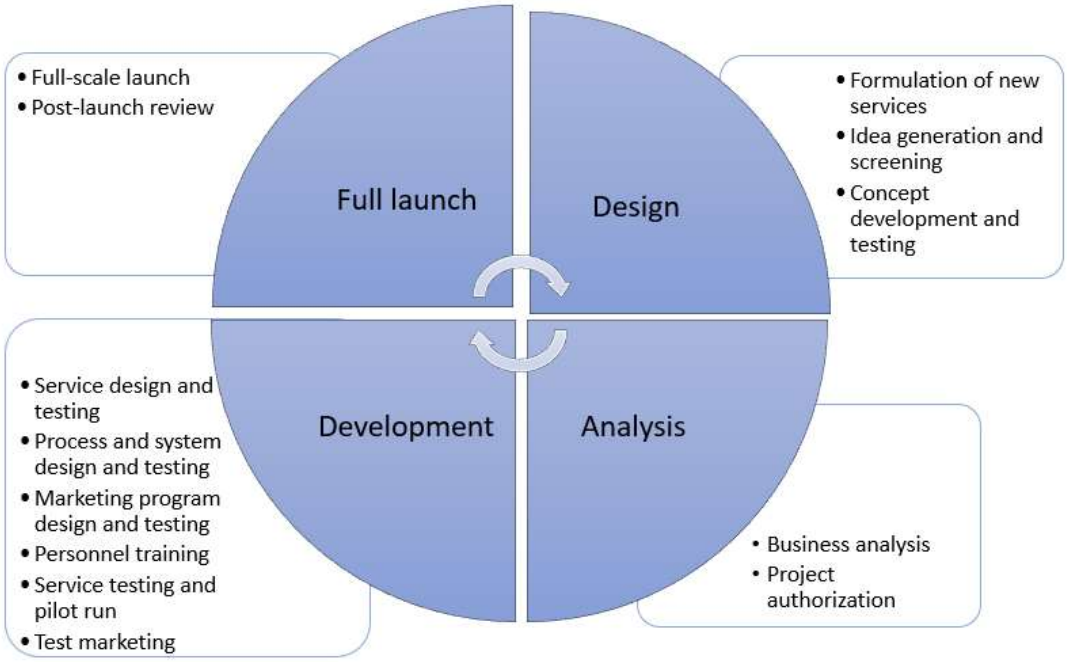

Figure 3. NSD process. Modified from Johnson et. al. (2000 p. 14.)

Instead of being linear the process is highly iterative. In some cases, the planning and implementation phases are related. The four stages can also be seen as two entities. The design phase includes the first two points, design, and analysis. When the project's progress is decided with a business analysis, the necessary capabilities and resources are allocated to it. Development and launch, on the other hand, represent the process cycle's implementation phase. Here the conclusions play a significant role. This includes the design of the service delivery system, a functional organizational culture, teams, and the utilization of planning tools. (Johnson et. al. 2000. pp. 13-14.)

NSD appears to be well-suited as a development model when developing new services in healthcare context. Jaakkola, Meiren, Witell, Edvardsson, Schäfer, Reynoso, Sebastiani & Weitlaner (2016 pp. 336-341.). examined the suitability of NSD for the development of numerous services using cross-sectoral survey that was conducted in seven countries. The study developed four typologies, one of which, "knowledge intensive services" best describes health care. The services are both complex and have a lot of contact with the customer. The need to customize the services is high and technology is also involved. In this category the use of NSD in development was highest. Also, the use of methods such as service blueprint, customer focus groups and business model canvas were more common in this category than in the other three. In this category the companies also had highest turnover from new services.

It is noteworthy that when comparing NSD process in knowledge intensive services to other three categories that are routine intensive services, technology intensive services, and contact intensive services, NSD processes in knowledge intensive service are most resource intensive. This is especially evident in people resources. Also, the customer interaction as well as interaction with external is highest in knowledge intensive services. (Jaakkola et. al. 2016 p. 338.)

2.3 Critical success factors of new service development (NSD)

Systematic and formal process has been noted as a success factor in NSD research. Jaakkola et all. indicates that when the formalized method is used in developing knowledge intensive services it leads to the situation that both investments and outcome are highest when comparing to the development of other kind of services. Companies explicitly report the use of a formal process as one of the success factors in developing this type of service. The use of different methods and tools from NSD is versatile among these companies and listening to customers appears to increase competitiveness. (Jaakkola et. al. 2016 p. 340.)

Johnson et. al. list the other success factors as follows "… nature of service, product-market characteristics, project synergy and service innovation culture" (Johnson et. al, 2000 p. 4-5.) The efficiency of the process and the success of the new service are affected by several factors. (Kitsios & Kamariotou 2020, p. 692.) Figure 4 presents the critical success factors of NSD.

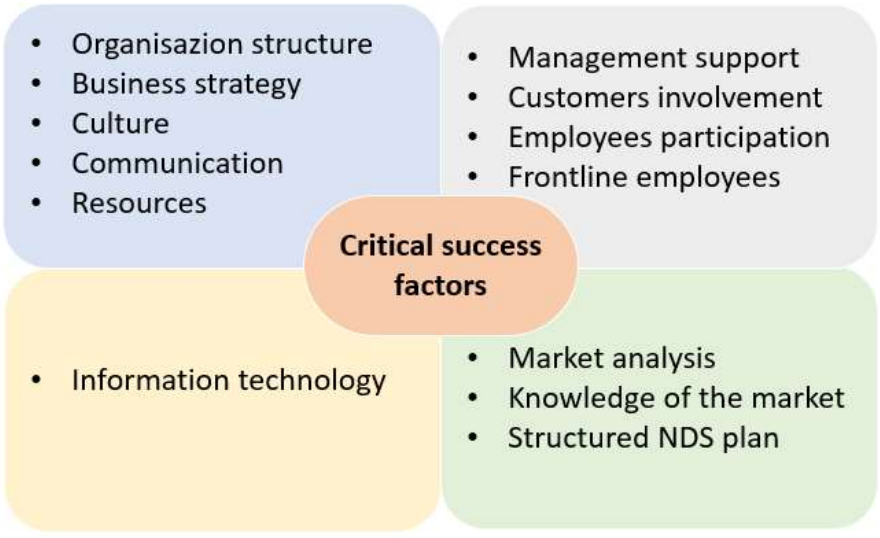

Figure 4. Critical success factors of NSD. Modified from Kitsios and Kamariotou (2020, p. 693).

Managers should promote a work culture that supports the emergence of latest ideas and innovations and seeks to develop an effective service that includes a good customer experience. Using technology in designing or modifying new services can be useful. (Kitsios & Kamariotou 2020, p. 692.)

It is important to involve both professionals and clients in the initial stages of brainstorming and later in testing. The most important group of professionals are those who work in direct contact with clients. Involving customers, in turn, increases customer understanding. Organizational culture, leadership style, the ability to get support and feedback from management when developing a new service are critical to success. (Kitsios & Kamariotou 2020, p. 693-694.)

Aligning the new service with the existing strategy seems to be the most important thing. Benefits come from aligning of the strategically important projects. This brings synergies and enables learning together. (Kitsios & Kamariotou 2020, p. 692.) In summary, even though NSD offers a systematic and formal process it still is good to be flexible when adapting NSD practices into the development of new services. In this way, the most appropriate methods for the situation can be identified. (Jaakkola et. al. 2016 p. 341.)

2.4 Service implementation

In a systematic review Granja et al. (2018) describe the success and failure factors on implementation of eHealth interventions. Most studies concluded that the workflow had to change for the eHealth solution to be successfully implemented and that adapting to the old workflow would be problematic. Succeeding requires learning how to use novel solutions and sticking to a new workflow. Because there is also a connection between the service's design and the success of the implementation, the involvement of end users in the service's design is key to success. According to the review, the biggest obstacles were workload, workflow disruptions, adapting clinical processes to the new service, unclear and changed roles, lack of face-to-face communication and personnel turnover.

2.4.1 Lean

Lean, originally founded in car industry, came to healthcare in the beginning of 21st century (D'Andreamatteo et. al. 2015, p. 1198). In Lean approach the target is to produce what customer wants at the lowest cost and no waste. Processes and customer journeys are in the focus. (McIntosh, Sheppy & Cohen. 2014, p. 483.) Organizations that took an operational approach to patient care could make significant short-term improvements requiring little investment. (D'Andreamatteo et al. 2015, p. 1198.)

Lean method is widely used in healthcare change processes, the purpose of which, in addition to streamlining operations, is to improve treatment results, increase patient safety and customer and professional satisfaction. The goal is also to bring financial savings and make operations sustainable. (D'Andreamatteo et al. 2015 1205–1206). This requires changing the healthcare paradigm from efficiency to the needs of end users and creating a service-dominant business logic. (D'Andreamatteo et al. 2015, p. 1202.)

Quite often Lean method is used on single processes. It is used to enhance operations at the unit or department level or by selecting only individual methods. The goal of Lean is Lean thinking to become part of the organization's operations, which makes it possible to enhance the operation of the entire production chain rather than sub-optimizing of the process. (D'Andreamatteo et al. 2015, p. 1204.) At the moment the evidence is mainly from reducing waste and increasing performance within specific units (McIntosh et al. 2014, p. 484, 488). The focus is on the information flow. Does it flow freely or are there bottlenecks. (McIntosh et al. 2014, p. 484.)

Implementing Lean concepts and techniques in healthcare have so far only been partially possible due the heavy labor intensity (McIntosh et al. 2014, p. 490). A few key issues have been identified in the application of lean methods to healthcare. In healthcare, it is difficult to determine customer value because it is difficult to identify the value for the patient himself. Activities should be customer-oriented, but in healthcare there are many different

parties involved, such as the financier in addition to the patient. Defining waste, setting quality control, setting phase times, and streamlining the process can also be problematic in healthcare. To be able to balance processes, it should be possible to control demand and balance flow, which is not possible in healthcare. In certain situations, however, Lean thinking works in healthcare. These include, for example, the elimination of duplication of work, the pre-planning of elective processes and referral processes (Lillrank 2018, pp. 6-7.)

Comprehensive review by D'Andreamatteo et al. (2015, p. 1206) shows, that Lean has possibility to assure lots of benefits, but it requires committed leadership and organizational readiness. On the other hand, there is a need for stronger evidence that lean solves the dilemma of rising public healthcare costs (McIntosh et al. 2014, p. 488).

2.4.2 Service design

According to Patrício et. al. "Service design is a multidisciplinary approach that builds upon design and service research, also integration contributions from marketing, operations, and interaction design, among others" (Patrício, Gustafsson & Fisk, 2018, p. 3). The key to designing services is to utilize experiential knowledge (Miettinen, 2021 p. 15). Human-centered approach, willingness to understand human experience and using that in creating better customer journeys are in the center of service design (Sangiorgi et al. 2019 p. 149). Human-centered design considers human activities, diverse needs, and requirements. These are considered at all different stages of design. Design is an iterative process in which a solution to a specific problem is sought through experimentation and testing. (Miettinen, 2021 p. 15)

Visuality, aesthetics and usability are inextricably linked to the design of services. Often in a service development team, the designer acts as the voice of the end user. The design process is typically thought of as a double-diamond model, the steps of which are ideation, definition, development, and implementation. Service design is guided by human-centeredness, participatory and visual communication, collaboration and co-development, and continuous experimentation and testing. (Miettinen, 2021 pp. 18-19.)

According to Alhonsuo (2019, p. 71.), service design has gained an increasing foothold in healthcare. Service design can offer a concrete, research-based and innovative approach to the development of healthcare services (Patrícion et. al, 2019, p. 115). Services in healthcare are critical, and there is no desire to fail in experiments. Services are also often differentiated, and service structures layered. By utilizing service design, it is possible to look at these entities more holistically. It is thought that service design can be used in the development of healthcare services, so that there is an opportunity for co-development. Co-development is also thought to influence the organizational and individual willingness to change. (Alhonsuo 2019, p. 71.)

Incorporating design into the operations of a large healthcare organization can arouse different opinions. However, there have been positive experiences with methods, especially design sprint, in the healthcare context. It would be important to strengthen the culture of experimentation and testing in the future. In this way, the organization would benefit even more from the use of service design. (Alhonsuo, 2019, p. 78-79.)

As noted earlier, service design and NSD have commonalities (Johnson et. al, 2000 p. 4). The NSD process has been considered to benefit in many different ways from using design-oriented approaches. The benefit is seen both in increasing the overall understanding and in understanding the user experience. The use of user centric methods makes it possible to identify the value created for the user and support joint development and prototyping. Involving professionals in design can better engage them in creating shared value for the end user and developing user-centric thinking and learning new methods can also help professionals deliver user-centric services eventually. (Yu & Sangiorgi, 2018, p. 40.)

3 Change management

Globalization and information technology make the environment both complex and uncertain to all kinds of organizations. To achieve its goals, the company must be able to streamline their operations and adapt to external challenges by acting agilely. In addition, organizations want to operate on an ecologically and socially sustainable basis. This requires taking initiative in innovating and managing change rather than responding to what is happening. (Cummings & Worley, 2005, p. 5-6.) Yet a challenge for successful implementation is the resistance to change in the organization because the organizations are not prepared for the introduction of eHealth solutions (Granja et al, 2018).

Change management means "a group of special management techniques required to control these processes involved in change" (Lauer, 2019 p. 4.) The aim in change management is "to internally implement the optimal adaptation to external changes derived from strategic management". Purposeful or intentional change is goal-oriented, efficient and is guided by the organization's mission. It needs space to experiment and work with bottom-up initiatives. (Lauer, 2019 p. 4.)

3.1 How to succeed in change

Three factors must be considered for change to succeed: structure, culture and individual (Fig. 5). Participation of the individuals is crucial to change. From the perspective of change management this means both promoting the positive attitude towards the change and the goals as well as understanding and learning the skills needed. The success of change requires structure and project, as the informal structures existing in an organization usually provoke resistance to change. The third significant entity is the organizational culture that encompasses the organization often informal values, attitudes, and rules. If this whole is not considered in the change, it will be difficult to succeed. (Lauer, 2019 pp. 6-7.)

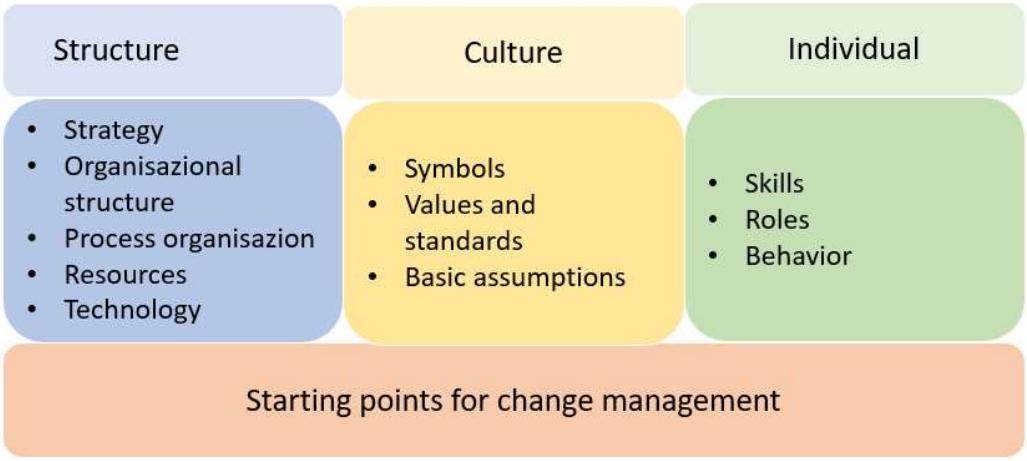

Figure 5. Starting points for change management. Modified from Lauer (2019).

The change can theoretically be described through the following steps. First the need for change comes from the context. It has been translated to the need for change in the organization and to the employees, who need to change their behavior. Next a clear scope is needed, that is either strategic or operational. After that the problem or the idea is clarified along with the goal. When the goal is defined, it is possible to plan the change, or the strategy needed. The best suitable change approach is then chosen and executed by using various interventions aimed at bringing about change in the organization and individuals towards the desired goal. (ten Have et al. 2015. pp. 89-90.)

It is common that the change fails. According to studies, the reason lies quite often in the operational employees and the middle management. The most problematic resistance to change is when it is not obvious. Responding to a new issue, failed communication, or the idea of loss of freedom are examples of such defensive mechanisms. Resistance can occur directly or indirectly and is influenced by the individual's personality and organizational culture. Resistance to change must always be taken seriously. (ten Have et al. 2015. p. 45.)

3.2 Change management in digital transformation

When it comes to digital transformation, from the change management point of view there are few things that need to be taken account. Enabling digital transformation requires

aligning both human and financial resources with the strategy. Successful change is not achieved on its own, but it requires engagement with other key players e.g., suppliers, distributors, and customers. Organizations need to be innovative, reactive, and proactive. This can be achieved by agile and collaboration-based development. The success of digital transformation requires dedicated support from the leader, understanding of technology, the active promotion of digital transformation, and decision-making that is more based on data and facts than intuition. (Mugge et. al., 2020, pp. 31-33.)

There is lots of going on in day-to-day communication. This means that leaders need to send a clear message about the needed change frequently embedded to all other communication. Also, the new vision needs to permeate all aspects of operations. Communications needs its time, and it needs to be transparent. It is important to understand the various aspects of communication. In every organization there is both formal and informal communication. When it comes to speed of transformation, successful communication plays a significant role. (Mugge et. al., 2020, p. 33.)

It is important that all different units involved gets the support, the goal is clear to everybody, and the staff is trained. The best is if the training is tied to the organizations key performance indicators (KPIs). Creating functional group to support the change enhances the speed of the change in hand. This kind of digital maturity of the organization is achieved through commitment, investment, and leadership. Priorities in this kind of organization are set realistically and the leaders understand that the process is not instinctual but needs a leader to lead the change. (Mugge et. al., 2020, pp. 33-34.)

4 Evaluating effectiveness in healthcare

Healthcare is always suffering from limited resources. For this reason, it is important to allocate the available resources so that the result is both desired and effective. Effectiveness should be one of the key priorities in health care, but in Finland both measurement and utilization of measurement results are still insufficient. (Pitkänen et al, 2018.) When talking about effectiveness, we can also talk about cost-effectiveness, especially if we want to emphasize costs. However, effectiveness also involves variables that are not easy to monetize. These include, for example, the patient's time, discomfort, or pain. (Torkki, Leskelä, Linna, Torvinen, Klemola, Sinivuori, Larsio & Hörhammer, 2017 p. 35.) In healthcare and welfare services, the goal after the health and social services reform are integrated services, which means coordinating the services so that they form a whole that meets the customer's needs. In addition to customer benefits, this aims at cost efficiency. Services can be grouped into service entities, service chains or service paths to help the coordination. Segmentation, i.e., the grouping of the population and the customer base based on similar service needs, is used in this. (THL, 2021.)

Michael Porter uses the concept of value when talking about cost-effectiveness and defines the value as follows, “In health care, value is defined as patient health outcomes achieved relative to the costs of care.” (Pitkänen et al, 2018, Porter, 2010 p. 2477). In addition to measurement, transparent reporting of results and costs is important, because it creates good competition and supports the emergence of innovation. Comprehensive patient-specific measurement at the service provider level is still rare, even internationally. (Porter & Guth, 2012 pp. 35-36.)

Traditionally, healthcare measures performance, but the relationship between performance and effectiveness is not straightforward. When monitoring performance, it is possible to increase the efficiency of operations with different effectiveness methods. However, especially in healthcare and social services, human delivery, genetic inheritance, or the environment can affect more than a given service. (Torkki et. al. 2017 p. 35.)

4.1 Measuring value

Treatment outcomes are mostly measured in research settings, but should be performed regularly, always, and on a patient-by-patient basis (Porter & Guth, 2012 p. 41). The results can be then combined and raised to a higher level, allowing the information to be utilized in management (Pitkänen et al, 2018). Gathering effectiveness data in health care is considered challenging. The measurement results should be reliable, and the view holistic measurement should be done from the perspective of the patient, the professional, and clinical outcomes (Pitkänen et al, 2018.). An example of this is shown in Figure 6. Efforts should be made to make the measurement nationally so that the results can be compared (Porter & Guth, 2012 p. 42.)

	PROM (Patient Reported Outcome Measures)	**PREM (Patiet reported Experience Measures)**	**Clinical measures and performance testing**	**Measures reported by healthcare professionals**
Description	Customer-reported well-being, ability to function, state of health	Customer-reported experience of service or care	Eg laboratory test, walking test, imaging test, compressive strength	The professional evaluates the client's health and ability to function.
Where to get information	By asking the customer		From the customer information system or other registers	
What the information is based on	Customer rating		For objective measurement	For professional evaluation
Example of a meter	EQ-5D	NPS	10 meter walking test	Work ability assessment

Figure 6. Various measures of effectiveness. According to Pitkänen et al. 2018.

4.1.1 Measures reported by the customer

Customers report using PROMs or patient report outcome metrics and PREMs or patient reported experience measures. PROMs are related to performance and health. These various disease-specific measures have long been used in clinical trials and because of this they are popular. In addition to disease group measures, this group also includes several measures

that measure health and quality of life. When selecting PROMs, one should choose international, standardized metrics to maximize comparability. (Pitkänen et al, 2018.)

The customer's experience with the service they received is measured with PREM meters. The most common of these metrics is the NPS (Net Promoter Score) (Pitkänen et al., 2018.) The patient's sense of security and the clinical effectiveness of the procedure are related to the patient's assessment of the customer experience. Customer experience also has a connection to one's perceived health, commitment to medical treatment, and commitment to preventive care. In addition, customer experience has a positive connection with the number of visits and length of hospitalization. The measure has a positive connection to the quality of care, for example the number of reported adverse events. (Doyle, Lennox, Bell 2013.)

4.1.2 Clinical measures and performance testing and measures reported by healthcare professionals

In health care and social care, it is possible to produce effectiveness data through the patient and customer information systems. Such measures include, for example, mortality or unemployment. These measures, when used alone, are insufficient. (Pitkänen et al, 2018.) Different clinical values or outcomes are monitored a lot in health care, for example laboratory tests. They influence treatment decisions, but data are not always easily available if recording is not structured. These results are often significant for the professional, not so much the patient. However, they are important to the whole. Professionals also use a variety of measures to assess client well-being. Professionals also have a range of different measures at their disposal to assess the patient's well-being. (Pitkänen et al, 2018.)

Measuring effectiveness often requires a planned and long-term approach, combining expertise and commitment from various levels of the organization. The customer must be brought to the center of the service. Collecting and utilizing data requires functioning IT systems. In addition, recognition must be given in the organization for achieving the set goals.

4.2 Selection of measures

There are many measures for many different uses. When choosing the measures, the key is from who and what kind of information you want to collect. Individual results do not tell you about effectiveness but need to be compared with the same measure at different time so that a change can be seen. (Pitkänen et al, 2018.) Various actors have over time started to use different kind of outcome measures and definitions. So far there has been no effective mechanism for standardizing outcome measures. (Porter, Larsson & Lee, 2016, p. 505.)

Since the metrics cannot be the same for everyone, customers should be divided into segments and selected metrics by the segments (Pitkänen et al, 2018). The International Consortium for Health Outcomes Measurement (ICHOM) a non-governmental organization, has convened together experts and patient representatives to create a minimum standard outcome sets to evaluate the results in a structured way. The idea is that organizations can "…collect additional measures, but everyone is encouraged to deploy these minimum sets." (Porter et. al. 2016, p. 505.) ICHOM's customer base and disease-specific metrics are based on a framework created by Michael Porter (Pitkänen et al, 2018). Now ICHOM has published 39 standard sets covering different conditions and for specific patient populations (ICHOM, 2022).

Effectiveness can be measured by measuring health, quality of life, functional capacity, and costs at the customer level. The efficiency achieved can be compared in three diverse ways: to a scenario in which nothing would have been done, a built forecast model or by comparing own results with those of other service providers. Patients are typically divided into two different groups when measuring outcomes. These are terminating service paths and endless service paths. An example of a terminating path is, for example, a patient entering an operation. In a patient with a long-term illness, the path is endless. Prevention could be considered as a third form. Impacts should be monitored systematically from all the patients in the short and long term. (Pitkänen et al, 2018.)

5 Normalization process theory

Normalization process theory (NPT) was chosen as the framework for the analysis because it has been used in several studies dealing with various health interventions and digital health services. The NPT helps to understand how complex practices can be made workable and integrated considering the context. The theoretical model gives a tool how to plan and evaluate policies and practices. (May & Finch, 2009, p. 536.) It is "concerned with the social organization of the work (implementation), of making practices routine elements of everyday life (embedding), and of sustaining embedded practices in their social contexts (integration)." (May & Finch, 2009, p. 538). NPT is a middle-range action theory. Middle-range theory is "…sufficiently abstract to be applied to different spheres of social behaviour and structure but does not offer a set of general laws about behaviour and structure at a societal level. The scope of the theory is defined by a limited set of assumptions from which can be derived hypotheses that may be confirmed or disconfirmed by empirical investigation." (May, Mair, Finch, MacFarlane, Dowrick, Terweek, Rapley, Ballini, Ong, Rogers, Murray, Elwyn, Légaré, Gunn, Montori, 2009.)

In NPT, the action is divided to four categories that are coherence, cognitive participation, collective action, and reflexive monitoring (Fig. 7), that represents the way people work in different kind of settings, for example new technology or a trial of a complex intervention (May, Cummings, Girling, Bracher, Mair, Murray, Myall, Rapley, Finch, 2015.)

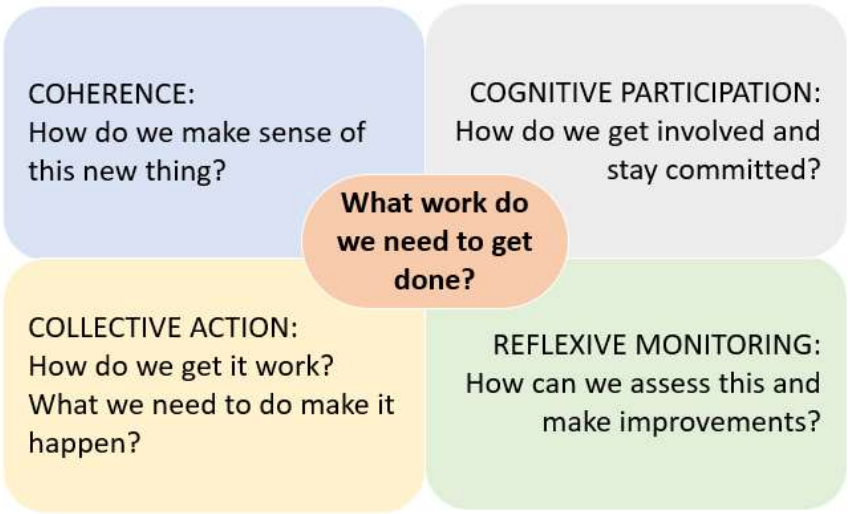

Figure 7. NPT visual summary. According to May et. al. (2015).

May et. al. (2018) state that NPT allows the description of key elements related to implementation and the theory appears to work consistently across studies. NPT also helps address extensive process evaluations in healthcare settings. It is flexible to use in a variety of healthcare settings and can be used by researchers with different professional backgrounds. This theory also has its own challenges e.g., technical vocabulary, but despite this it has been widely used in numerous studies. According to the developers of the theory, there is no right way to use theory in research. It can be used alone or combined with other theories.

The four core constructions on NPT and how they are divided presented according to May et al. (2015) are follows.

Coherence

The first construction in the model is coherence. It is all about making sense and how people both together and individually work toward sense-making in operationalizing new practices. It is divided in four components.

- Differentiation explains how it is important to understand how "…set of practices and their objects are different from each other" May et al. (2015).

- Communal specification describes how sense making depends on the shared understanding of the aims, objectives and expected benefits that the new set of practices bring.
- Individual specification means how individual person understands the responsibilities and tasks in a specific set of practices.

Cognitive participation

Cognitive participation has four components. This entity includes the relational work that "people do to build and sustain a community of practice around a new technology or complex intervention." May et al. (2015.)

- Initiation is about getting the key participants driving the new concept.
- Enrollment means building the communal engagement needed in involving the new practice.
- Legitimation describes how participants are assured, that they have right to be involved and their contribution is valid and needed.
- Activation defines collectively the actions and procedures to be able to sustain the new practice and how everybody stays involved when it is in action.

Collective action

Collective action is divided in four components that describes the operational work people do when they start using the new set of practices weather it is a new technology or complex healthcare intervention.

- Interactional workability is interactional work together done with people or artefacts and other elements of sets of practices when operationalizing them in everyday work settings.
- Relational integration means a knowledge work people do to be certain about the new set of practices and maintaining confidence on each other in using them and to consider that double workload does not arise.

- Skill set workability is about allocating the work around the set of practices in real world.
- Contextual integration means managing the allocation of different kind of resources around the new set of practices.

Reflexive monitoring

The new work needs continuous appraisal in a way of reflexive monitoring, so it is possible to understand the effects of it. This construction also has four components.

- Systematization means collecting information and using it to understand how effective and useful the new set of practices is compared to the old one.
- Communal appraisal is about evaluating the new set of practices in informal settings or formal collaboratives.
- In individual appraisal the users evaluate the effects of the new set of practices or the technologies in the context in which they use them
- Reconfiguration is about willingness to redefine or modify the practices because of the appraisal work coming from an individual or a group.

Due to the versatility of the theory, it was selected for use in this thesis in the complex operating environment of healthcare.

6 My Path application

My Path was originally a digital healthcare service channel developed in the Virtual Hospital 2.0 project that utilizes healthcare units to build their own service packages or care programs for their own patient groups. (TerveyskyläPRO, 2020.) The platform is run by HUS Helsinki university hospital. The technology is generic, and the tools and templates enable its use in different patient or social care customer groups (Arvonen & Lehto-Trapnowski, 2019 p. 14; Terveyskylä 2022.) A model created for the development of a digital care paths emphasizes the use of various methods, such as lean and service design, as well as risk management and communication (Arvonen & Lehto-Trapnowski, 2019 pp. 8-9).

Although digital care paths were originally created for the needs of specialized healthcare, they have now expanded to include primary healthcare and social care. The care pathways are used in seven hospital districts or municipality associations. The patient enters the digital care path by referral. (Terveyskylä, 2022.)

6.1 Digital care path

The digital care path consists of treatment guides, information content, exercises, and questionnaires. These can be accompanied by automatic feedback and reminders. The professional can monitor the patient's situation from their own user interface. The idea is that digital care paths should be seamlessly integrated into existing services. The goal is that with the deployment of the digital care path, modes of operation, process roles and work tasks can be modified. A digital care path enables treatment to be given and received regardless of time and place. (TerveyskyläPRO, 2020.)

My Path uses strong authentication, in this case Suomi.fi authentication, because the care path consists sensitive health information. Using My Path service requires Finnish bank credentials. A parent can use the service on behalf of their child. (TerveyskyläPRO, 2020.)

The digital care paths are currently made of three distinct types: patient entering the operation, a long-term patient, and therapy or coaching-type pathways. (Arvonen & Lehto-Trapnowski, 2019 p. 7)

6.2 Developing digital care path

To support the development of digital care paths, a coaching program has been created, which can be found in the TerveyskyläPRO service. TerveyskyläPRO is available to professionals who have a social or healthcare certificate card. Developing a digital care path consists of four main phases: design, content production, deployment, and maintenance. (TerveyskyläPRO, 2020.) A summary of the content of the different stages of the development model is shown in Figure 8.

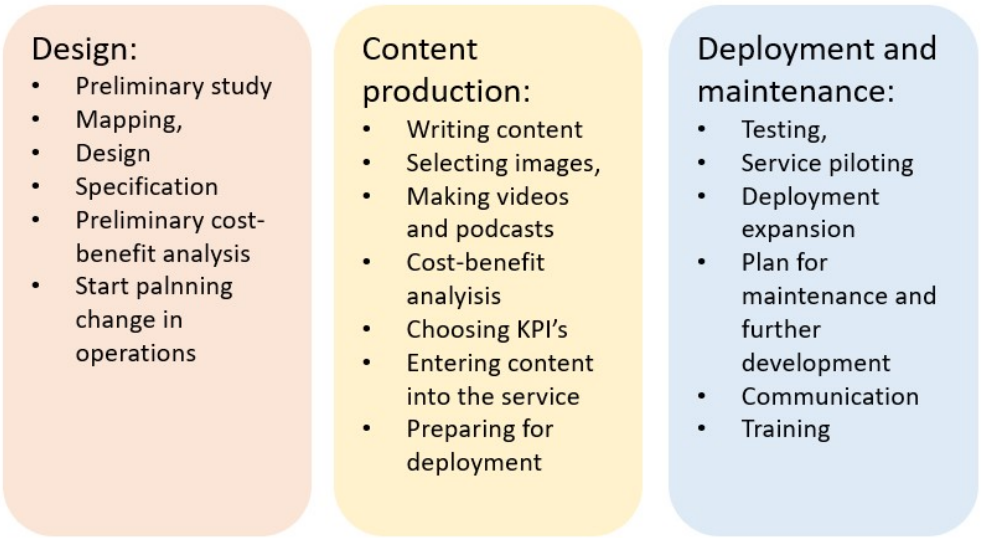

Figure 8. Development of digital care path, visual summary.

The development takes place in the healthcare unit as a project implemented by the unit's own employees. In addition, a dedicated development partner will be appointed for the project team to support the team and communicate with technical developers. The model also directs the use of lean coaches or service design methods. Also hearing the customer's voice is important. (TerveyskyläPRO, 2020.)

Design includes preliminary study, mapping, design, and specification. After these steps, it is possible to describe how the treatment of a specific group of patients will be organized after the introduction of the digital care path. Attention is drawn to the selection of a suitable group of patients for the digital care path. This may be a strategically significant group of patients, a growing group of patients, or a group of patients with high treatment costs. In the planning phase, it is encouraged to describe the patient's journey from home to home and to utilize, for example, lean and service design. At this stage, it is also encouraged to consider the cost benefits of the service and how the change in operations will be implemented and what the unit's capabilities will be for the change in operations. The coaching program provides a workbook for the design phase. (TerveyskyläPRO, 2020.)

Writing content, selecting images, making videos and podcasts are all part of producing content. The specification of the cost benefits is also linked to this stage, selecting key performance indicators, entering content into the service, and preparing for deployment in the unit. (TerveyskyläPRO, 2020.) Deployment and maintenance include testing, service piloting, and post-pilot deployment expansion. The goal is to finalize a plan for maintenance and further development during the pilot. With the advent of the new service, communicating about changes is essential. There should also be time to train in the use of the new service. Healthcare managers can also use additional material to train their professionals, such as “Unit digi mentor” or” An organization pioneer” before starting to create new digital care paths. (TerveyskyläPRO, 2020.)

The program offers instructions in different formats and templates to support units when they build services. Also, support from development partners is provided. (TerveyskyläPRO, 2020.)

7 Methodological choices in empirical research

The research is carried out as a qualitative study. The method is a case study, and the material is collected by interviewing a healthcare professional. A case study looks at a single event or a limited entity. Typically, case studies are used to review processes. The case study does not aim at generalizing information but at a deep understanding of the phenomenon under consideration. However, according to Saarinen et. al. (2006), it is possible to obtain surprising information through an individual case and it is good to look at the applicability of the results to other similar cases. (Saaranen-Kauppinen & Puusniekka, 2006.)

7.1 Selection and description of informants

The research material was based on the thematic interviews of seven healthcare professionals,' who had experience on the deployment phase of a digital care path, which has been implemented using My Path application. Most had experience in developing and operating more than one pathway. The informants were recruited on a discretionary sample from this group of professionals. The framework of the thematic interview was based on previous literature (Juhila, 2021, Hyvärinen et. al., 2021). In this study, particularly NPT.

It was essential to find people who have knowledge of the subject under investigation. In terms of sample size, the key question is what number of informants are sufficient for this study. (Juvakka & Kylmä, 2007 p. 58-59) In this research after seven interviews, it can be said that the material became saturated. The material can be considered saturated when the new interviews no longer bring added information to the research problem. (Saaranen-Kauppinen & Puusniekka, 2006.) This was reflected in the interviewees describing similar experiences. Naturally, unique experiences were also found, but after seven interviews, it was possible to identify key entities for the research question.

7.2 Conducting interviews

The informants were sought form two different university hospitals in Finland. The researcher had a contact person at both university hospitals who helped to find suitable interviewees. The researcher authored an email bulletin, and the contact person sent it to the professionals. The professionals who wanted to be interviewed contacted the researcher and agreed on the interview time.

The interview proceeded according to the framework of the thematic interview. The thematic interview considers the interviewee's interpretation of the issues, and their meanings are central to the interview. In this way, it is possible to make the voice of the informants heard. However, the thematic interview seeks answers according to the research tasks. (Hyvärinen et al., 2021) The interviewees had received pre-selected themes in advance in connection with the interview invitation. The pre-selected themes were based on the research framework (Juhila, 2021). The topics of the interview were same for all interviewees.

The interviews were conducted via Teams-meeting and recorded. Interviewees had been sent beforehand a research bulletin and consent, which was reviewed at the beginning of the interview and the interviewee's consent was confirmed. The interviews lasted an average of 51 minutes. The recorded interviews were first transcribed using MS Word dictation program and then they were edited by the researcher. A total of 96 pages of text were generated from the seven interviews. At that point it was possible to compare the dictation to the original interviews and make the necessary repairs.

7.3 Ethical principles and reliability

The study follows good scientific practice. Participation in the study was voluntary and participants were given a research bulletin about the study, its purpose, publication, voluntary participation in the study and information that the interviews are treated confidentially and the anonymity of respondents is not compromised. The researcher went through the bulletin with the interviewees before the start of the interview, so that the

interviewees could still decide whether they want to participate in the study. The bulletin also contained the researcher's contact information if the interviewees had later questions about the research. In addition, the research material is safely stored, and the material will be disposed of as planned after the research report is written. (Finnish advisory board of research integrity, 2012.)

7.4 Data processing and analysis

In this study, the analysis is theory-based (Juhila, 2021). In this way, it is possible to look at the emergence of a theoretical framework in practice. The analysis itself was performed using content analysis (Juvakka & Kylmä, 2007, p. 112). The researcher first read the transcribed material several times. This stage of work is important, and the researcher sought to preserve reality as accurately as possible. (Juvakka & Kylmä, 2007 pp. 65-66.) The material was then coded against the core constructs and specific components of NPT: coherence, cognitive participation, collective action, and reflexive monitoring (Mair & Finch, 2009, p. 540). As May et. al. (2018) has noted, the theory worked well in the description of key elements related to implementation also later, when the results were combined to previous research. The review of the development process was smooth in relation to the chosen analysis framework even though the vocabulary was at first difficult.

8 Results

All the informants underlined, that the entire process of building the new digital pathway to a specific group of patients is important from the view of implementation. As a result, a review of the entire process was considered in the results. Here the developing of a new service means using My Path application to build a digital care path to a specific group of patients. The informants said that they follow a certain protocol created for this building process. In interviews, informants often mirrored their own and others' actions in relation to the protocol. The protocol is described in the chapter 6.2 "Developing digital care path." Developer in this context means a healthcare professional who is building a digital care path using My Path application. This section is divided in four main categories, answering to all the research questions.

8.1 Factors that challenge and promote commitment to the use of digital care path

There were several factors that both challenged and promoted the commitment to use of digital care path. Managers and especially middle level managers had a key role in all of them.

8.1.1 Importance of collective understanding

The biggest challenge is the lack of collective understanding. Informants recognize that especially middle level managers, for example ward managers, do not have enough understanding of how digitalization would change the work of nurses and doctors. They also have a thin understanding of the service itself and its possibilities. While they support the development and implementation of the service, they do not necessarily understand the opportunities and changes brought about by the service in the current way of working. This also means that those, who develop the service, do not receive enough support from the managers.

This becomes apparent primarily in the change in operations. In these situations, the responsibility for supporting the change in operations remains with the person who develops the service, most often the nurse, who is tasked with promoting the change in operations in the same unit where he or she works.

> "I have been given time to do the work, but left alone to support the change in operations, even though I am only a colleague to others." (H3)

However, significant support for operational change can be the manager's confirmation that the new service is the primary way to communicate with the patient.

Starting the development often comes from the desire of clinical experts. They see digital care path as an opportunity to provide information to the patient in a new format. It is also hoped that by using the service, the patient would be more committed to their care than before. The commitment of the professional is enhanced by both the resources provided to the unit and the financial incentives, which allows for a focus on the development process and development do not have to be done in addition to normal work.

Those who develop the service identify differences in commitment among managers. Managers participate in the process if the topic interest them. If the managers do not participate to the process it leads to a situation where management may have little idea why the digital care path is developed, how it is believed to change operations, and what it will take to maintain it. Still manager's role is to decide to start developing the service and enabling resources for it.

The design of the service is often the responsibility of the same professionals who produce the content of the service. On some paths, the design phase is deficient because it is not considered important, and the process moves quickly to content production. This leads to

situations where there is no clear understanding of the need for the service. On the other hand, success is achieved in situations where the point in the process to which the service would fit is clearly identified. Especially if careful selection of the patient group is studied in a multi-professional manner. The informants also have valuable experience that the developed service exceeds the current organizational boundaries, and the entire care chain of the patient is examined during the planning phase. This requires the courage to start changing the current way of doing things. Networking with others in the same situation increases collective understanding. A strong network of digital care path administrators contributes to the success of the service deployment.

Informants understand the importance of evaluating the effectiveness of the service and that the changes in work should also be able to verify by measurement, but there are no means to implement it other than conducting a study. Everyone sees this as a challenge, as management is waiting for evidence that the new way of treating patients is cost-effective. Matters related to measurement are found to be particularly challenging, whether it is KPI (key performance indicators) metrics or measuring effectiveness. The collection of customer feedback is also deficient in some digital care paths. The studies are conducted, and the path is seen as a good opportunity to recruit patients. However, there is much more potential for research. In the face of the challenge of setting indicators, a practical solution is that in the first place the efforts are made to bring about a successful change in operations.

8.1.2 Changes in doing your own work

Identifying change in one's own work is important for informants. There is a change in roles, and it is important to identify one’s previous skills and combine them with new tasks. Learning new tasks is also part of the process. Although the informants’ knowledge of the My Path application and the construction of digital care paths has increased significantly, they feel that the digital competence of the units can not only depend on them, but that support, and guidance is also needed from outside the unit.

The informants report positive changes in their work. The work is perceived lighter than the usual work as a nurse and it also motivates in a new way. Informants describe concrete changes in the process. How they can give up repetitive guidance or an appointment with the new service or how the communication with the patient changes from phone to messages in the care path. In particular, the introduction of the messaging feature is found to concretely reduce patient calls to the unit. The professionals also feel that they have improved in communicating with the patient via the network. Communicating through the service is felt to be easy. Professionals also value the possibility to work remote and the visibility they gain to the patient's well-being at home.

> "Working with families has changed (with digital care path). It has affected the number and duration of calls as well as the nurse's job description." (H6)

Resistance to change appears in distinct groups of professionals or individual professionals. The greatest resistance to change arouses from concern that one's own workload increases. Communication and training the professionals plays a key role in the successful implementation of a new service.

Professionals working in the service also reflect on their own work. The new way of working is seen as a meaningful and momentous change in career. Professionals want to help develop the new features and praise the courage and ability of their own organization to implement digital services to the patient.

> "This has brought a professionally meaningful change to the job. One of the most significant things that has come into nursing. A responsible, interesting new way of working." (H3)

8.1.3 Confidence in the new system

Informants express their confidence in the new system in many ways. The service is an effortless way to stay connected with a discharged patient. The opportunity to gain visibility for the first time about how the patient is doing at home is significant. This allows the patient to be discharged faster from the hospital. For one group of patients, this has affected treatment times so that they are now the shortest nationally. The fact that the patient fills in the questionnaires in advance is also important for the doctor's reception work. The doctor can examine the patient's situation in advance. Patients, in turn, are active and take care of their affairs through the care path. The use of the care path also empowers patients and strengthens their confidence to leave home sooner. The messaging feature is particularly actively used among patients of all ages, as well as with parents of pediatric patients and various disease groups.

Different professional groups that use the service are nurses, doctors, and department secretaries. Although all of these groups express confidence in the new service, it is mainly used by nurses. Department secretaries are another significant user group. The nurses who develop the path also see the added value of the path to the doctor’s work. There are anyhow situations where the doctor using the service does not trust remote reception, that could replace the actual reception visit. In this way, the service does not provide the intended benefits.

8.2 Different stages of facing the challenges

Challenges emerge in different stages from the design phase to when the service is in use. The challenges from the initial stages that are not solved reflect later to the deployment phase. The inability to select performance monitoring metrics affects to the services so that they are not able to add value to the organization.

One phenomenon that emerges at all stages of development, deployment and during the use is the resistance to change. It is already evident in the design phase of the new service. Resistance to change in this phase is often related to the perception that digital services are unsuitable for some group of patients or elderly patients. It is thought that older people cannot use them. At the time on deployment the resistance to change is related to fear that the new service would increase workload and patients would not know, how to use it. When the service is in use, the resistance to change is caused by the lack of integrations between the new service and the existing systems. Lack of integrations leads to the situation where professional records same things to two separate places. From the patient's point of view, the service is still smooth, but for the professional caring for it, it causes extra work.

8.2.1 The design and development phase

At the design and development phase the lack of a common vision is a major challenge. When the whole platform is still new and there is no experience with digital care paths, it is challenging to start development, because all the possibilities of the platform is not understood. Although the project group could use the jointly agreed development model, it is not used, or it is used only partially. One can hold a workshop with clients once, take advantage of the results of a previous client survey, or use lean methods to describe the current state, but using the tools is not systematical. Managers are also unable to take on the leading role showing that they are initiators, innovators, and pacesetters in service development. This causes problems later during the deployment phase.

The fact that the service is not developed according to the agreed model or that participatory methods are used occasionally results to situation where the patients' voices are not heard in the development of the service and the development relies only on the expertise of professionals. This leads to situations where at the design stage it is not always possible to identify a real problem that would be solved during the construction of the service. This means that the service does not meet the needs of patients and is not used by professionals.

> “The content of the service must meet the need. We need to know what problem we want the new service to manage or eliminate.” (H4)

During the development of the service, significant challenges are related to resources. The people in the project team can change or no new people are assigned to replace those who leave. The project team consists of shift workers and finding a common time to develop the service is challenging.

> “Getting a project team together is a hassle because everyone does this alongside their own work.” (H3)

8.2.2 The deployment and maintenance phase

For many pathways, the same observation is done in relation to the occupational group. The paths are mainly used by the nurses even though they could also be used by the doctors. This is identified as a challenge, especially after deployment, as physicians often play a key role in identifying and informing new patients suitable for the service during the receptions.

> “Physicians as a professional group should have been more involved in this job because they should inform the patient about the service and motivate them to use it.” (H5)

At the time of deployment, managers do not recognize their own role and place in organizing and managing operations. This also effects on planning the necessary resources for deployment. Resourcing is not possible in the role of the developer, because they do not have a managerial role. After deployment, it is also difficult for the manager level to identify those resources needed to maintain the service and further development.

> “It is difficult for line managers to understand their own place in implementing the service.” (H3)

When the service is in use, there is little continuous evaluation of one's own operations. For example, monitoring the working hours of a professional or how a digital care path changes the way professionals interact with patients is considered difficult. This also makes it impossible to take efficiency measures. Even though the service should be continuously improved according to the feedback the situation can be that the development plan for the service is completely lacking.

> “We evaluate our own work too little. More should be done to ensure that resources are allocated wisely.” (H6)

Evaluating the efficiency and usefulness of the service poses challenges both during the design phase of service development and during maintenance. When there is not yet a clear understanding of service, it is felt difficult to set metrics. Measuring baseline also poses challenges. For example, data must be collected manually, because the technology used does not allow easy access to data. Measuring cost-benefits is found to be particularly challenging.

Various technical challenges also emerge during the use. The platform is seen as rigid and unsuitable for implementing the service of a long-term ill patient. The lack of integrations also hampers the work of professionals.

There are communication problems associated with the deployment phase. In all situations, it is not ensured that the key user groups of the service are aware of the launch of the pilot and their own role in the use of the service. Similarly, stakeholders may be ignored, resulting in them not getting information about the launch of the pilot. The idea in this is that the service would not apply to that group of professionals because they will not use it in their work.

8.3 Overcoming the challenges

A commonly agreed development model, participatory methods and successful communication are key factors in tackling the challenges that arose. Planning the change in operations is critical. The multidisciplinary way of working and the versatile and systematic use of participatory methods in cooperation with professionals and patients contribute to the service's successful implementation. Continuously evaluating the service by monitoring the feedback, setting metrics, and using them in developing it is important for its effective use.

8.3.1 Commonly agreed development model

Professionals form different levels of the organization need to create a mutual understanding of what problems and in which patient group they want to solve using My path application, what kind of value they want to achieve and how this is going to change the ways of working. This sense-making seems to be a crucial part of the process that effects the outcome. It is essential for the success of the service to select the right group of patients, because if this stage does not get enough attention and the project team quickly moves on to design and script the service one might end up getting a care path that is not used by the patients. For the optimal result, the time to select the patient group is taken and done with the clinic professionals. Other important thing is to identify and address process issues.

For a collective understanding it is important that the change in operations is planned together by a multi-professional team. Deployment will not be successful if the change in operations has not been planned and implemented to match the new service. According to the informants, a jointly agreed development model for service development, projecting the development and a review of service development in different stages in a multi-professional group would prevent problems from arising. Management is committed to developing the service by involving them in the review.

8.3.2 Utilization of participatory methods

Involving the professionals as well as the patients and the managers is important. In concrete terms, this means joint workshops, interviews, or questionnaires. Questionnaires, interviews, and workshops are used in design and development phase. Questionnaires and interviews give background information for the planning and identifying the problem. In the workshops, the participants together describe the current state, plan the target state, and make value flow descriptions. Reviewing the service at different stages of its development is also done in multidisciplinary groups. In addition to planning the service path, the workshops design the content of the service.

> "Prior (building the service) we used lean method in a multidisciplinary working group. We looked through everyone's work assignments. This gave rise to development ideas, which were then implemented in the service." (H5)

Patients are involved in workshops planning the service, interviews and testing the path before the pilot begins. Professionals are also involved in workshops and testing. According to informants, using participatory methods brings development close to the end user, provide information about the new service at different stages of development, and reduce resistance to change.

> "End users were testing the service, because we wanted to make it as suited to their needs as possible." (H5)

On some of the paths, it is possible to use the skills of a lean coach in development work, which is considered important. The contribution of so-called development partners outside the unit specializing in application and development is also considered significant in mastering different methods needed in the development and different stages in development process. The role of development partners has also been to help organize workshops and trainings.

8.3.3 Role of communication

Informants identified the role of communication important at different stages of service development. Success is achieved when different methods of communication are used for different target groups, at all stages of service development and implementation.

The progress of the service's construction is communicated in the weekly nurse meetings. These meetings involve the service developer, the ward manager, and the doctor in charge. Other channel that is used is email. Separate reports are done to managers. There is no similar continuous communication for doctors about the development of the service.

The patient is introduced to the new service during the visit and often by providing written material or by sending a letter. When the service is in use, a communication plan is made for it. The service is often presented to management, for example in management team meetings. The results obtained from the use of the digital care path, e.g., customer feedback, are presented to the entire staff.

Communication also involves network building and networking. The developers of the service collaborate with each other and with designated developer partners. Listening to success stories and working together to reflect on and find solutions to challenges helps service developers in their own work. It is important that the professionals who use the service themselves tell others about it.

8.3.4 Training in the use of the new service

Training in the use of the service and new ways of working is part of the successful implementation of the service. The training must consider the needs of different professional groups. It is essential to learn how the service technically works and what is the role of a nurse, doctor, or secretary on a particular digital care path. For the professionals who starts

to use the new service, training is a major help. Successful training is timely and adequate, and it is good to implement it as close as possible to the implementation.

In addition to training, it is noted that an orientation program for the service and its use in the role of a professional is necessary. This can be included as part of the unit's general orientation program. The orientation program to digital care path guarantees the uniformity of care, guidance and communication provided in the service. Terveyskylä PRO's ready-made training materials for professionals are also used in the orientation, which are related to the use of digital services. The care or guidance provided in the service may also be new to the professional. In this case, professionals will also receive in-service clinical training in connection with the service's introduction.

8.3.5 Selecting monitoring indicators and planning of change in operations

Informants identified the need for measures for digital services in the same way that there are already measures for, for example, fall prevention or patient safety. Although it was difficult to find measures to increase the effectiveness of treatment or production efficiency, some services managed to do so. Some of the pathways had different measures of effectiveness, such as monitoring quality of life, current treatment recommendations or monitoring the balance of care in newly ill patients. Digital care path also has lot of potential for research, especially for nursing research, or for medical intervention research.

> “The patient on the path is monitored for different values based on the reference values of the current treatment recommendation.” (H3)

Collecting patient feedback helps to understand the importance of the service to the patient and it also supports service development planning. The feedback explicitly states whether the service's development has created added value for the patient. The feedback received from patients is considered relevant especially in the initial phase of using the service. When the feedback is good it feels that they have been able to build a service that really serves the

end user. Feedback from patients seems rewarding and encourages further development of the service.

> "Based on the experience gained from the first path, the following (digital care paths) are much lighter (in terms of content). Patients were not interested in all the content we made." (H6)

Management is also expected to pay attention to feedback from the patients, and not just to immediate benefits e.g., to cost savings. Continuous or periodic collection of patient feedback and its analysis enables the agile development or the configuration of the service. With the feedback, it is also noticed that the service designed by the professionals does not meet the needs of the customers. This may lead to conclusion that the service will be completely discontinued. Patient feedback does not always cause a change in the service itself. Based on the feedback received, hospital treatment has also been developed.

If it is difficult to select metrics can focusing on change in operation yield a good outcome. By introducing a completely new operating model standardizes the care received by patients, especially when the new service is incorporated into other existing activities. After deployment, it is essential to be able to evaluate the service as part of the unit's operations, because continuous evaluation is seen as an opportunity to develop existing practices and better embed the digital care path to the unit's other operations.

8.4 Supporting the health professionals in implementing eHealth solutions

There are several ways in which healthcare professionals can be better supported in implementing eHealth solutions. Managers must understand the need for, development and maintenance of the service and the resources required for it. They must also support the building of trust in the new service. Development must be multi-professional and customer listening needs to be in the center of the development.

8.4.1 Support from the managers

According to the informants, the managers' support appears in the extreme as unreserved support for the development of the service, or the service developer is left to do the work alone. In practice, the support is everything in between. The support provided is important. The management needs to understand what the development of the service is all about and why it is being done, what kind of challenges they want to solve with the new way of working and how it is possible to achieve by build this solution. It is important to consider other variables related to the service already during the building phase of the service, such as appointment types, billing issues, durations of receptions or the need for training.

> "I feel like management does not understand the service enough, even though they are committed to it. They need to have a realistic picture." (H7)

8.4.2 Courage to make changes

In developing the service for a group of patients, the work is facilitated by the opportunity to look at the entire care chain. According to the informants, health and well-being reform influences the development of digital care paths and encourages a review of the entire supply chain. When the customer path is visible throughout the journey, it is also possible to find completely new types of operating models.

In addition to the commitment of the management, the development of the service is supported by an agile structure for decision-making. This allows the project team to stay in time and keep moving forward. The designated project team and the implementation of the jointly agreed development model as well as support, concrete guidance and assistance from the service provider and development partner are considered important.

Developing a service, often with a little resource, from the beginning is an earnest effort. The informants have good experiences of involvement of an external partner, such as an

educational establishment. This kind of collaboration supports the development and deployment of the service. Allocating resources to the development of the service but also to the maintenance phase is central to the commitment of professionals. The necessary resources must be planned before deployment.

8.4.3 Trust in the new service

One of the prerequisites for successful deployment is trust in the new service. To the informants it is important for building trust in the new service, to get support from the manager, and see that manager is taking the leadership, and allocating resources. Trust in the new service is reflected in the fact that the service is introduced to the patient as the unit's primary communication channel or that the time the patient spends in the hospital can be shorten because the use of the path increases patients' sense of safety, allowing for earlier discharge. For services where the physicians are active users, they receive more prior information about the patient.

> "We can discharge the patients faster when it is known that they will not be left alone at home. We currently have the shortest treatment times in Finland." (H1)

With the new service, the units also succeed in changing the traditional ways of working, as it is also possible to treat the patient remotely on a digital care path. Also, opportunity to work remotely encourages professionals to choose to work in the digital care path.

9 Conclusions and proposals for the future research

The last chapter reviews the results in relation to the background theory and research questions. After that the usability of the results are examined. Finally, proposals for further research are presented.

9.1 Conclusions examined by research question

In the following, the four research questions of the thesis are dealt with individually.

1. **What factors challenge and promote the commitment of healthcare professionals to the use of eHealth solutions?**

There are several factors that both challenge and promote the commitment to use of the eHealth solution that are under scrutinizing in this research. Biggest challenges are lack of collective understanding, resistance to change and difficulty of evaluating the effectiveness of the service. On the other hand, there are several promoting factors.

Middle level managers are a specific group who do not have enough understanding of the possibilities of digitalization or the possibilities in the implementation of the specific service. Because of this they are not able to support the professionals who are developing the new service. The responsibility for supporting the change in operations remains with the person who develops the service. Most often that is a nurse who is tasked to promote the change in the unit. However, from the perspective of NSD the managerial decision making is essential for the process to progress. (Johnson et. al. 2000. pp. 13-14.)

According to studies (Granja et. al. 2018; ten Have et al. 2015. p. 45) the challenge for successful eHealth solution implementation in the organization is resistance to change, which is strongest among middle management and operational employees. Also, in this study resistance to change appeared to be a challenging factor.

As Kraus et. al state (2021, pp. 561-562), that digital transformation is affecting to working practices and processes. In this study, understanding how one's own work changes is seen as a promoting factor. The new way of working is seen as a meaningful and momentous change in career, which is something important to consider in the current healthcare environment. Also, financial incentives and resources promote the commitment of the professionals. Communication and training the professionals plays a key role in the successful implementation of a new service.

Health information technology has many different positive impacts on both patients and professionals. (Kraus et. al. 2021, p. 561). In this study these are seen as promoting factors. The professionals, especially nurses who mostly work on digital care path express confidence in the new system in many ways and explain how the service has affected their day-to-day work. The new service enables them to give up repetitive work or an appointment and they can get more information on the patient after discharged. The possibility to work remote is also important. Along the new service the way to communicate has changed and it seems to please both professionals and the patients. According to professionals the service also empowers the patients. Professionals are proud of the services and how their organization had implemented digital services to the patients. The new way of working was described a meaningful and momentous change in career.

2. How and at what point in the implementation process do challenges emerge?

Challenges emerged in all stages of implementation. If the challenges were not solved during the initial stages of the process or the project did not follow the agreed protocol, it reflected later to the deployment phase. One problem that emerged at all stages was resistance to change. This has been a challenge in the organization that is not ready for digitalizing services (Granja et al. 2018). In the design phase the thought was that the service will not be suitable to the certain patient group. At a later stage, it was feared that the workload would increase, and the service was opposed for this reason. Also, professionals thought that the patients are unable to use the service. Lack of integrations and usability issues were reason to resistance to change. The same dissatisfaction was also visible in the previous study (Erhola et. al. 2020 p. 57-58; Niemelä & Kivipelto, 2019 p. 8) Challenges in communications

caused problems in later stages of the implementation. All these are also findings from the systematic review by Granja et al. (2018).

The challenge that had a major impact in this study was the inability to select performance monitoring metrics even though this should be one of the key priorities in health care. (Pitkänen et al, 2018.) If the service did not have metrics to evaluate the service, it was not possible to assess the benefits of implementation the service. This seems to be a frequent problem. According to Pitkänen et al. (2018) in Finland both measurement and utilization of measurement results are still insufficient. This study revealed that sometimes it was not clear what challenge the service was intended to meet, and the service was left unused. This was because the agreed protocol was not followed in the development and the patient group was not carefully selected.

3. By what means is it possible to overcome the challenges?

According to the informants, the management support, a commonly agreed development model, participatory methods, successful communication, continuous monitoring of the feedback and evaluation of the service were key factors in tackling the challenges that arose. In addition to this, there rose several success factors from the theory to support the implementation of a new service.

It is essential that the problem to be solved or the added value created by the digital care path is determined in cooperation with both the professionals working at various levels of the organization and with the customers. It is all about making sense and how people both together and individually work toward sense-making in operationalizing new practices and how they start to build a community around the new technology (May et al., 2015.)

Following the agreed model will facilitate the development of the service. Using structured service development model like NSD especially in knowledge intensive services such as healthcare leads to high output (Jaakkola et. al. 2016 p. 340; Johnson et. al. 2000 p. 14). The best result is obtained when this is combined with other methods (Jaakkola et. al. 2016 p.

341.; Johnson et. al, 2000 p. 4-5; Kitsios & Kamariotou 2020, p. 692). When compared the use of systemized model and success factors of NSD and how the informants described the process of developing new digital care path it is clear, that the former focuses on changing the organization and its capabilities to accommodate the new service (Fig. 9). How the organization is structured, what kind of business strategy they want to build, what kind of culture exists in the organization, how things are communicated and what kind of resources the organization need to be able to succeed. Also, the support from the management is seen as a major success factor along with the involvement of customers and employees. (Kitsios and Kamariotou 2020, p. 693) Special attention should be paid to listening to customers.

On the other hand, from what the informants told, the attention in creating digital care paths is in the development of the service and the readiness of the organization or the unit that is going to use the new service is not assessed. None of the informants told that building the services are part of the strategy of their organization even though, according to Kitsios & Kamariotou (2020, p. 692) aligning the new service with the existing strategy brings synergies and enables learning together.

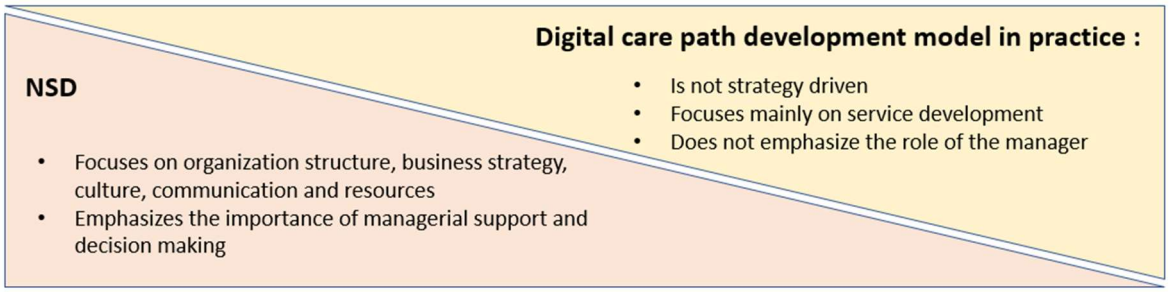

Figure 9. Key differences between NSD and Digital care path development model.

Selecting the right group on patients is one of the central keys of success in this study and time is used for this step. Finnish Institute for health and welfare stresses that when implementing new services in healthcare it is important to use segmentation (THL, 2021). Segmenting the patients is important also when choosing the metrics (Pitkänen et al, 2018).

Communication is important at different stages of the process, and it needs to be delivered in various methods. Communication involves network building and networking. Success in communication enables learning from other developers of digital care paths in the same situation. In transformation communication plays a vital role (Mugge et. al., 2020, p. 33). Communication is also related to training. All the separate groups need training as a part of successful implementation. In this study one of the prerequisites for successful deployment is trust in the new service. Managers had a significant role in strengthening this.

Effectiveness measures has been found for some of the digital care paths. Although measuring effectiveness is seen important and there is a desire to learn more about them, in the initial phase the change in operations is seen as particularly important and succeeding in it yielded a good outcome. To gain a holistic view, measurement should be done from the perspective of the patient, the professional, and clinical outcomes (Pitkänen et al, 2018.). The measurement should be carried out regularly and on a patient-by-patient basis (Porter & Guth, 2012 p. 41). So, it is not enough that we only evaluate the digital care path. Metrics developed for digital care path could instead be tied to organization's KPI's which are needed in any case to monitor change in transformation (Mugge et. al., 2020, p. 33) According to this study digital care paths offer a good opportunity for research. Opportunities for especially health science research emerged.

4. **How can health professionals be better supported in implementing eHealth solutions?**

The most crucial factor identified in how professionals can be better supported in implementing eHealth applications is related to leadership both in day-to-day management as well as strategic management. According to studies the main factors that must be considered for change to succeed are structure, culture and individual (Lauer, 2019 p. 6). It is important to move from a culture of experimentation to strategy-driven change throughout the organization.

In digital transformation human and financial resources need to be aligned with the strategy. Jaakkola et. al. (2016 p. 338) stated that the development of knowledge-intensive services is resource-intensive. Informants stated that resources were often too limited, and responsibilities easily focused on individuals.

The manager needs to lead by own example and send a clear message. He or she needs to provide the resources and show support to the project team and commitment to the new service. They need actively promote the transformation and have ability to make decision based on data and facts. (Mugge et. al., 2020, pp. 31-33.) In practice this is seen as agile decision-making during the implementation and later as resources allocation for the maintenance and continuous development. In addition to management support, significant support for service development comes from HUS and local designated development partners or from lean experts and service designers. All this kind of support is considered important. Even though the project takes place in the certain unit and the professionals from there often play a leading role, they cannot be left alone to lead the project. Also networking with other professionals that are in same situation and building the service together as a project team with the patients are concrete ways for the professionals to get support during the process from the peers.

The leaders must also understand technology to some extent (Mugge et. al., 2020, pp. 31-33). In implementing the digital care paths, the managers need to know the possibilities of the product and why the service is needed. The latter is part of the market knowledge and marketing analysis necessary for the success of the service (Kitsios & Kamariotou 2020, p. 692). In healthcare, this means knowing the operating environment and related legislation. The new service gives an opportunity to look at the entire care chain and find completely new types of operating models. Consideration of innovative approaches can be done using a variety of participatory methods. Lean methods, by the previous studies, help to streamline operations, improve treatment results, increase patient safety and customer and professional satisfaction. (D'Andreamatteo et al. 2015 1205–1206).

Critical feedback came also from both usability and the lack of integrations between different systems. This kind of problems can be tackled. End-user involvement is essential in usability design because succeeding in service implementation requires getting to the centre of customer processes. (Niemelä & Kivipelto, 2019 pp. 9). Using service design is a possible method to execute this (Sangiorgi et al. 2019 p. 149).

The professionals using the new system need to gain value when using it. If the value comes only to the patients, it is not possible to achieve cost savings by digitizing services, which is one of the main goals in healthcare and welfare reform (Finnish government 2021b). To achieve this, the services need to be integrated so, that they form a whole that meets the customer's needs. In addition to customer benefits, this aims at cost efficiency (THL, 2021.) This means that the importance of integrations and usability issues need to be understood along reviewing of the entire treatment chain. These things are significant in terms of how professionals start using the new service.

9.2 Key results and their usability

The objective in this study was to describe the challenges and contributing factors related to the introduction of an eHealth patient solution, a digital care path that is developed using My Path -application from the perspective of a professional. The purpose was to produce understanding of the phenomenon and to find methods on how to support professionals around deployment. The work was commissioned by Tietoevry.

In this work, the need of the client was addressed with the help of theoretical review and an empirical section. First the theoretical framework was chosen and the theoretical background build. An overall view of the current state of development of digital care paths was produced through interviews. The results show the factors that promote and challenge the development and deployment of the service, at what stage and what challenges arise, how they can be tackled, and the ways in which professionals can be supported. The empirical part was then combined with existing research results and models.

9.2.1 Summary of the key results

The results highlighted the importance of leadership, change management, and jointly agreed development model. How the digital transformation needs to be integrated to the strategy of the healthcare organization. The importance of usability and integrations as part of service development along with the issues related to measuring efficiency. The development of a new service needs support from the strategy. Individual deployments without strategy support can easily become detached and the desired benefits will not be achieved. The change brought about by digital services must be identified and led. Implementing a digital care path or any eHealth solution needs a collective understanding and commitment to change in the organization. Service development needs a structured model to ensure the quality of the process.

When developing the service, the patient's entire care path should be considered. Understanding customer processes is at the heart of developing a new service. This also involves reviewing and modifying existing processes. Customer segmentation should be used both in the development of the service and in the selection of measures of effectiveness. Effectiveness should be measured from different perspectives. From the beginning, the development of eHealth solution should be tied to organization’s KPI’s.

A significant challenge in implementing a new service is resistance to change. Change management is particularly important for success. Technical considerations must also be considered, as the lack of integrations and usability issues are one of major causes of resistance to change in transformation. Communication plays a significant role in the success of the implementation in all stages. Communication includes network building and networking. Success in communication enables learning from others in the same situation. The summary of the research results has been compiled into Figure 10. The findings are divided in two categories, challenging factors, and success factors in such a way that they can be viewed in relation to the theory used.

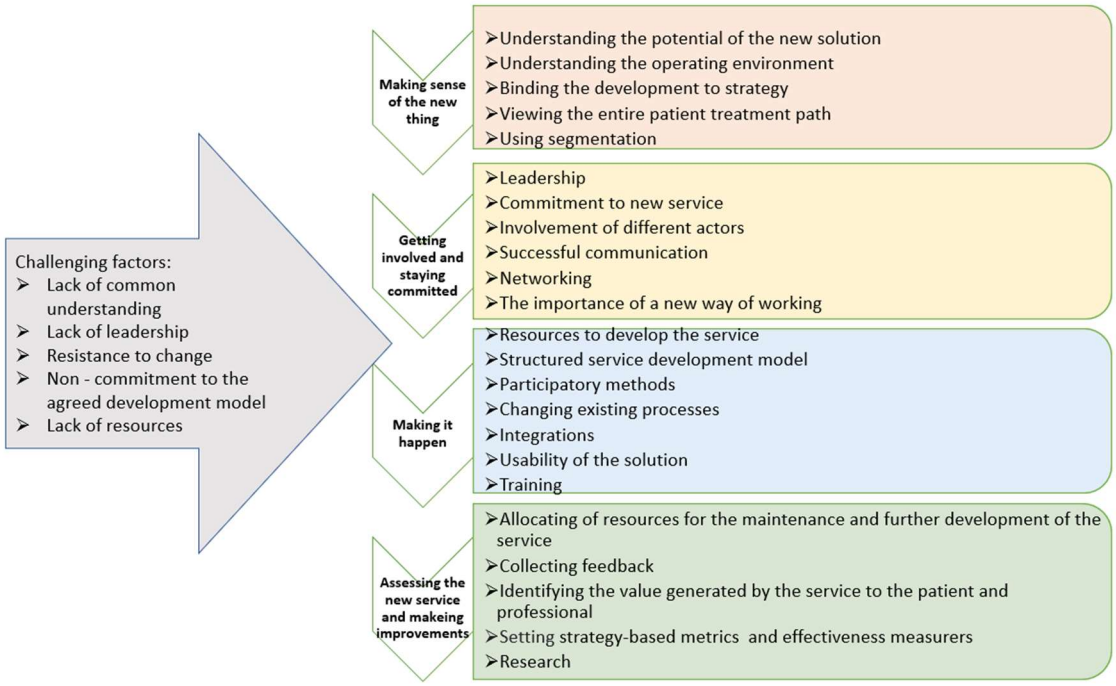

Figure 10. Summary of challenging factors and success factors reflecting on the NPT.

9.2.2 Usability of the results

The aim in digital transformation of the company commissioned this work is to be able to support care providers in providing "hybrid" wellbeing and care journey to the citizens by optimal combination of digital care services and in-person touchpoints. To make this possible they needed to get input into their offering development work. They also wanted to deepen the understanding about capabilities and services that are needed in addition to technical solutions to support the implementation of customers' digital care paths in different healthcare units.

According to the company this master's thesis create knowledge and understanding to leverage in their further development of digital care product and consulting services for care provider organizations. The results of the work give a useful structure of the focus points in product and service development. The work gives answers to what are the characteristics that professional users value in the technical product together with what kind of challenges

need to be solved by the consulting services during different stages of development to ensure success in future business development and growth targets.

From the perspective of care provider organization, the results provide an opportunity to look at the existing development model in relation to the results presented in this work and to use them in their digital care development. The work also provides information to those working at various levels of the healthcare organizations on what factors should be considered when developing a service. In particular, the results highlight the importance of change management and leadership.

This thesis provides information on the situation in which a significant reform of health care and welfare is being conducted in Finland. In the reform digital services are seen as one of the methods to streamline services and increase production efficiency. Although this work examines the implementation of digital care path, the results can be widely used in various implementations of digital solutions in healthcare. For this to be possible, however, the specific operating environment must be known. The results raise several proposals for further research, the promotion of which would also be meaningful in view of the national goal of digitizing public services and the achievement of the health and social services reform goals.

9.3 Proposals for future research

Healthcare is transitioning, and digital services are becoming more part in care chains. From this perspective, the review made in this work can be deepened in several separate ways in future studies. In the future, services should be reviewed from the perspective of effectiveness, both from the perspective of the patient, the professional and the clinical outcomes. The simultaneous use of many different user interfaces and software poses challenges for the smoothness of a professional's work. Therefore, it would be important to evaluate the suitability of various integration solutions in the healthcare context. Because digital services generate a lot of added information about users it would be important to look at the use of information as part of service development, as well as the quality and the ways of processing of information. Identification of factors influencing the readiness of the

healthcare organization to change related to the introduction of digital services should also be viewed. Healthcare needs attractiveness and the ability to keep employees engaged. Working on a digital care path is relevant and important. For the future of health care, it would be important to look at what factors in digital services make healthcare professionals interested in this work.

References

Arvonen, S., Lehto-Trapnowski, P. 2019. Tekemisen meininki - Virtuaalisairaala 2.0 -kärki-hankkeen yhteenveto. Accessed 14 January 2022. Available at the Virtuaalisairaala 2.0-hankkeen loppuraportti

Ciere Y, van der Vaart R, van der Meulen-De Jong A, Maljaars P, van Buul A, Koopmans J, Snoeck-Storband, J.B., Chavannes, N.H., Sont, J.K., Evers, A.W.M. 2019. Implementation of an eHealth self-management care path for chronic somatic conditions. Clinical eHealth, 2:6-11.

Cummings, T., Worley, C. 2005. Organization development and change. St. Paul: West Publishing. Canada.

D'Andreamatteo, A., Ianni, L., Lega, F., Sargiacomo, M. 2015. Lean in healthcare: A comprehensive review. Health Policy, 119, pp.1197–1209.

Doyle, C., Lennox, L., Bell, D. 2013. A systematic review of evidence on the links between patient experience and clinical safety and effectiveness. BMJ Open, 3:e001570. doi: 10.1136/bmjopen-2012-001570

Erhola, M., Jormanainen, V., Kovasin, M., Rissanen, P. Keskimäki, I. 2020. Suomen terveydenhuolto muuttuvassa toimintaympäristössä. Yhteiskuntapolitiikka, 85, p. 55.

Fimea. (2021). Lääkinnälliset laitteet. Accessed 24 February 2021. Available at the Lääkinnälliset laitteet.

Finnish advisory board of research integrity. 2012. Responsible conduct of research and procedures for handling allegations of misconduct in Finland. Accessed 30 July 2021. Available at the Hyvä tieteellinen käytäntö ja sen loukkausepäilyjen käsitteleminen Suomessa.

Finnish government. 2021a. Government programme. Strategic themes. Accessed 14 July 2021. Available at the https://valtioneuvosto.fi/en/marin/government-programme/restructuring-of-health-and-social-services.

Finnish government. 2021b. Sote-uudistus. Health and social services reform. Accessed 14 July 2021. Available at the Soteuudistus.

Finlex. 2017. 159/2007 Act on the Electronic Processing of Client Data in Healthcare and Social Welfare. Accessed 18 July 2021. Available at the Act on the Electronic Processing of Client Data in Healthcare and Social Welfare.

Finlex. 2021. 612/2021 Lakisosiaali- ja terveydenhuollon järjestämisestä. Accessed 20 January 2022. Available at the Laki sosiaali- ja terveydenhuollon järjestämisestä

Fiks AG, DuRivage N, Mayne SL, Finch S, Ross ME, Giacomini K. 2016. Adoption of a portal for the primary care management of pediatric asthma: A mixed-methods implementation study. Journal of Medical Internet Research, 18(6): e172

Granja, C., Janssen, W., Johansen, M.L. 2018. Factors Determining the Success and Failure of eHealth Interventions: Systematic Review of the Literature, Journal of medical internet research, 20, Accessed 20 January 2021. Available at the Journal of Medical Internet Research

Harvey J, Dopson S, McManus RJ, Powell J. 2015. Factors influencing the adoption of self-management solutions: An interpretive synthesis of the literature on stakeholder experiences. Implement Science, 10:159

ten Have, S. ten Have, W. Huijsmans, A-B., van der Eng, N. 2015 Change competence implementing effective change. Routledge. New York.

Hyvärinen, M., Suoninen, E., Vuori, J. 2021. Haastattelut in Laadullisen tutkimuksen verkkokäsikirja. Vuori, J. (edit.) Yhteiskuntatieteellinen tietoarkisto, Tampere. Accessed 23 July 2021. Available at the Menetelmäopetuksen tietovaranto

Alhonsuo, M. 2021 Design sprint-prosessi osana terveyspalveluiden kehittämistä in Muotoilun avaimet älykkääseen teollisuuteen ja liiketoiminnan kehittämiseen. Miettinen, S. (edit.) Teknologiainfo Teknova Oy, Helsinki, pp. 71-79.

ICHOM. 2021. Patient-centered outcome measures. Accessed 27 January 2021. Available at the ICHOM

Jaakkola, E., Meiren, T., Witell, L., Edvardsson, B., Schäfer, A., Reynoso, J., Sebastiani, R., Weitlaner, D. 2016. Does one size fit all? New service development across different types of services. Journal of Service Management, 28, pp. 329-347

Johnson, S.P, Menor, R.J., Roth, A.V., Chase, R.B. 2000. "A Critical Evaluation of the New Service Development Process," in New Service Development: Creating Memorable Experiences, James A. Fitzsimmons and Mona J. Fitzsimmons, eds. Thousand Oaks, CA: Sage, pp. 1-32.

Juhila, K. 2021. Laadullinen tutkimus ja teoria. in Laadullisen tutkimuksen verkkokäsikirja. Vuori, J. (edit.) Yhteiskuntatieteellinen tietoarkisto, Tampere. Accessed 30 July 2021. Available at the Menetelmäopetuksen tietovaranto

Juvakka, T., Kylmä, J. 2007. Laadullinen terveystutkimus. Edita. Helsinki.

Kieseppä, T., Hiltunen-Toura M. 2023. Uudet digitaaliset palvelut edistävät sote-palvelujen saatavuutta ja saavutettavuutta. Accessed 13 April 2023. Available at the Uudet digitaaliset palvelut edistävät sote-palvelujen saatavuutta ja saavutettavuutta

Kitsios, F. Kamariotou, M. 2020. Mapping new service development: a review and synthesis of literature. The Service Industries Journal, 40, 682-704.

Kujala, S., Ammenwerth, E., Kolanen, H., Ervast, M. 2020. Applying and extending the FITT Framework to Identify the Challenges and Opportunities of Successful eHealth Services for Patient Self-Management: Qualitative Interview Study. Journal of Medical internet Research, 22 (8), pp. 1-13

Kraus, S., Schiavone, F., Pluzhnikova, A., Invernizzi, A. C. 2021. Digital transformation in healthcare: Analyzing the current state-of-research. Journal of Business Research, 123, pp. 557–567

Lauer, T. 2019. Change Management Fundamentals and Success Factors, Springer, Germany.

Lillrank, P. 2018. The Logics of Healthcare. Productivity Press. Nordic Healthcare Group. Lean-ajattelu terveydenhuollossa, Accessed 8 January 2021. Available at the Nordic Healthcare Group

Mair, F.S., May, C., O'Donnell, C., Finch, T., Sullivan, F, Murray, E. 2012. Factors that promote or inhibit the implementation of e-health systems: an explanatory systematic review. Bulletin of World Health Organization, 90, pp. 357–364,

May, C., Cummings, A., Girling, G., Bracher M., Mair, F.S., C.M., Murray, E., Myall, M., Rapley, T., Finch, T. 2018. Using Normalization Process Theory in feasibility studies and process evaluations of complex healthcare interventions: a systematic review. Implementation Science.

May, C. Finch, T. 2009. Implementing, Embedding, and Integrating Practices: An Outline of Normalization Process Theory. Sociology, e 43 (3), pp. 535–554

May, C., Mair, F., Finch, T., MacFarlane, A., Dowrick, C., Terweek, S., Rapley, T., Ballini, L., Ong, B.N., Rogers, A., Murray, E., Elwyn, G., Légaré, F., Gunn, J., Montori, V.M. (2009). Development of a theory of implementation and integration: Normalization Process Theory. Implementation Science 4:29.

McIntosh, B., Sheppy, B., Cohen, I. 2014. Illusion or delusion – Lean management in the health sector. International Journal of Healthcare Quality Assurance. 27, pp. 482-492

Miettinen, S. 2021. Ihminen ja muotoilu in Muotoilun avaimet älykkääseen teollisuuteen ja liiketoiminnan kehittämiseen. Miettinen, S. (edit.) Teknologiainfo Teknova Oy, Helsinki, pp. 71-79.

Ministry of finances. 2021. Programme for the Promotion of Digitalisation. Accessed 14 July 2021. Available at the Valtiovarainministeriö .

Mugge, P., Abbu, H., Michaelis, T.L., Kwiatkowski, A., Gudergan, G. 2020. Patterns of Digitization, A Practical Guide to Digital Transformation, The Patterns of Digitization survey highlights how companies implement digital transformation and how digitally mature and digitally developing companies differ. Research-Technology Management. 03-04, pp. 37-34.

Niemelä, J. Kivipelto, M. 2019. Asiakaslähtöinen palvelupolkumalli tulevaisuuden sote-keskusten lähtökohdaksi. Terveyden ja hyvinvoinnin laitos (THL). Työpaperi 37/2019. Accessed 24 January 2022. Available at the Terveyden ja hyvinvoinnin laitos

Pitkänen, L., Haavisto, I., Vähäviita, P., Torkki, P. Leskelä, R-L, Komssi, V. 2018. Vaikuttavuus SOTE:ssa suoritteista tuloksiin. White paper. Nordic Healthcare Group. Accessed 26 January 2022. Available at the Nordic Healthcare Group

Patrício, L., Gustafsson, A., & Fisk, R. 2018. Upframing service design and innovation for research impact. Journal of Service Research, 21, pp. 3-16.

Porter M. 2010. What is value in health care? New England Journal of Medicine, 363, 2477-81.

Porter, M.E., Guth, C. 2012. Redefining German Health Care, Moving to Value-Based system. Springer-Verlag Berlin Heidelberg.

Porter, M., Larsson, S., M.D., Lee, T.H. 2016. Standardizing Patient Outcomes Measurement, New England Journal of Medicine, 347 pp. 504-506.

Raitakari, I. 2021. Information about the company. Oral communication, 11 February 2022.

Saaranen-Kauppinen, A., Puusniekka, A. 2006. KvaliMOTV - Menetelmäopetuksen tietovaranto. Accessed 21 January 2022.Available at the Menetelmäopetuksen tietovaranto

Salminen, A. 2011. Mikä kirjallisuuskatsaus? Johdatus kirjallisuuskatsauksen tyyppeihin ja hallintotieteellisiin sovelluksiin. Vaasan yliopiston julkaisuja. Opetusjulkaisuja 62, Julkisjohtaminen 4.

Sangiorgi, D., Lima, F., Patrício, L., Joly, M.P. and Favini, C. 2019. A human-centered, multidisciplinary, and transformative approach to service science: a service design perspective, in Handbook of Service Science, Vol. II, Maglio, P.P., Kieliszewski, C.A., Spohrer, J.C., Lyons, K., Patrício, L. and Sawatani, Y., (Eds) Cham, pp. 147-181.

Sarkar U, Karter AJ, Liu JY, Adler NE, Nguyen R, Lopez A., Schillinger, D. 2010. The literacy divide: Health literacy and the use of an internet-based patient portal in an integrated health system-results from the diabetes study of northern California. Journal of Health Communication, 2:183-196.

Sneha S, Straub D. 2017. E-Health: Value proposition and technologies enabling collaborative Healthcare. Proceedings of the 50th Hawaii International Conference on System Sciences. Maui: ScholarSpace. Accessed 21 May 2021. Available at the ScolarSpace

STM. 2016. Digitalisaatio terveyden ja hyvinvoinnin tukena, Sosiaali- ja terveysministeriön digitalisaatiolinjaukset 2025 p. 18. Accessed 2 February 2022. Available at the Valtioneuvosto

STM. 2021. Suomen kestävän kasvun ohjelma. Hankeopas STM:n ensimmäiseen valtionavustushakuun vuodelle 2022. Sosiaali- ja terveysministeriön julkaisuja 2021:39

THL. 2021. Sote-palvelujen integraatio. Accessed 2 February 2022. Available at the Terveyden ja hyvinvoinnin laitos.

Terveyskylä. 2022. Omapolku. Accessed 15 January 2022. Available at the Terveyskylä Omapolku

TerveyskyläPRO. 2020. TerveyskyläPROn digihoitopolun aloitusvalmennus. Verkkokurssi. TerveyskyläPROPRO. Accessed 15 January 2022. Available at the Terveyskylä PRO

Torkki P., Leskelä R-L., Linna M., Torvinen A., Klemola K., Sinivuori K., Larsio A., Hörhammer. 2017. Ehdotus sosiaali- ja terveyspalveluiden uudeksi kansalliseksi mittaristoksi. Valtioneuvoston selvitys- ja tutkimustoiminnan julkaisusarja 36/2017.

Urowitz S, Wiljer D, Dupak K, Kuehner Z, Leonard K, Lovrics E, Picton, E., Seton, E. Cafazzo, J. 2012. Improving diabetes management with a patient portal: A qualitative study of diabetes self-management portal. Journal of Medical Internet Research, 14(6): e158.

Vehko, T. Ruotsalainen, S., Hyppönen, H., Ilmarinen, K. 2018. E-health and e-welfare of Finland. National Institute for Health and Welfare (THL). Helsinki

Warma-Lehtinen, E., Parviainen, K. Akusti-foorumi. (2021). Potilas- ja asiakastietojen käsittely yleisen tietosuojasääntelyn valossa. Nykytila, ongelmakohdat ja kehittämismahdollisuuksia. Accessed 24.1.2020. Available at the Kuntaliitto

Yu, E. and Sangiorgi, D. 2018. Service design as an approach to implement the value co-creation perspective in new service development. Journal of Service Research, 21, pp. 40-58.

Appendix 1. Research bulletin and consent

TERVEYDENHUOLLON AMMATTILAISTEN KOKEMUKSIA eHEALTH-RATKAISUN KÄYTTÖÖNOTOSTA: TARKASTELU NORMALISOINTIPROSESSITEORIAA HYÖDYNTÄEN

TIEDOTE TUTKITTAVALLE JA SUOSTUMUS TUTKIMUKSEEN

OSALLISTUMISESTA

Pyydän teitä osallistumaan diplomityöhöni, jossa tutkin potilaille suunnatun eHealth-ratkaisun käyttöönottoa ammattilaisen työn näkökulmasta.

Tämän tutkimuksen tavoitteena on kuvata eHealth-ratkaisun käyttöönottoon liittyviä haasteita ja edistäviä tekijöitä ammattilaisen näkökulmasta. Tarkoituksena on tuottaa ymmärrys ilmiöstä ja löytää käytäntöjä siihen, miten ammattilaisia voidaan tukea käyttöönoton yhteydessä.

Tutkimus toteutetaan yksilöhaastatteluna. Haastattelussa keskustellaan erilaisista eHealth-ratkaisun käyttöönottoon liittyvistä teemoista. Aikaa haastatteluun kuluu n 60 minuuttia. Haastattelut nauhoitetaan ja myöhemmin kirjoitetaan nauhoitusten perusteella tekstiksi analyysiä varten. Tutkimuksesta saatua tietoa voidaan käyttää eHealth-ratkaisujen käyttöönottojen kehittämiseen.

Kaikki haastattelussa saatu tieto käsitellään luottamuksellisesti. Tulokset raportoidaan niin, ettei ketään yksittäistä haastateltavaa voi tunnistaa. Tulosten julkistamisen jälkeen haastatteluihin liittyvä materiaali hävitetään.

Tutkimukseen osallistuminen on täysin vapaaehtoista ja voitte keskeyttää osallistumisen missä

vaiheessa tahansa syytä ilmoittamatta. Tulokset raportoidaan keväällä 2023 LUT yliopiston tuotantotalouden laitoksen diplomityönä.

Lisätietoja tutkimuksesta saatte diplomityön tekijältä.

yhteystiedot:

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Appendix 1. Research bulletin and consent

TUTKITTAVAN SUOSTUMUS

Minua on pyydetty osallistumaan tutkimukseen potilaille suunnatun eHealth-ratkaisun käyttöönotosta. Olen saanut tietoa tutkimuksesta sekä kirjallisesti että suullisesti. Minulla on myös ollut mahdollisuus esittää tutkijalle lisäkysymyksiä tutkimuksen liittyen.

Tiedän, että tutkimukseen osallistuminen on vapaaehtoisesta ja että voi keskeyttää osallistumisen milloin tahansa syytä ilmoittamatta. Ymmärrän että tutkimuksessa antamaani tietoa käsitellään luottamuksellisesti.

_____

Päiväys, tutkittavan allekirjoitus

_____

Päiväys, tutkijan allekirjoitus

Appendix 2. Interview themes

HAASTATTELUTEEMAT

Kertoisitko digihoitopolun käyttöönotosta:

- ensin pääpiirteittäin, minkälaisen digihoitopolun käyttöönotossa olet ollut mukana?
    - Mikä on polun potilasryhmä?
    - Ketkä ammattilaiset työskentelevät polulla?
    - Mihin tarkoitukseen polku on rakennettu?
    - Mikä on ollut oma roolisi käyttöönotossa?

- Miten valmistauduit/ valmistauduitte käyttöönottoon?
    - Mikä onnistui hyvin?
    - Kohtasitko/ kohtasitteko haasteita? Jos, niin minkälaisia ja miten ratkaisitte niitä?
    - Mitä opitte, mikä esim. olisi jälkeenpäin ajatellen kannattanut tehdä toisin?

- Miten käyttöönotto toteutettiin?
    - Mikä onnistui hyvin?
    - Kohtasitko/ kohtasitteko haasteita? Jos, niin minkälaisia ja miten ratkaisitte niitä?
    - Mitä opitte, mikä esim. olisi jälkeenpäin ajatellen kannattanut tehdä toisin?

- Muuttiko digihoitopolun käyttöönotto toimintatapoja?
    - Jos kyllä, miten muutos suunniteltiin ja toteutettiin?
    - Mikä onnistui hyvin?
    - Jos muutos ei toteutunut suunnitellusta, mistä ajattelet tämän johtuvan?
    - Miten seuraatte muutoksen vaikutuksia?
    - Mitä opitte, mikä esim. olisi jälkeenpäin ajatellen kannattanut tehdä toisin?

- miten digihoitopolun käyttöönotto on vaikuttanut…
    - sinun omaan työhösi
    - potilaaseen
    - tiimin työskentelyyn/ yhteistyöhön muiden ammattiryhmien kanssa?
    - miten seuraatte muutoksia?

Onko jotain muuta, mitä haluaisit kertoa digihoitopolun käyttöönottoon liittyen