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Transition Through Co-creation in Social and Healthcare Services?
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Transition Through Co-creation in Social and Healthcare Services?
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My journey while writing this dissertation may best be described as a roller coaster. Years were initially spent debating whether to board this ride. I questioned whether it would be possible. As it turned out, it was possible, but required a lot of help from many people that I would like to thank next.

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Tampere, 11 November 2023

Johanna Leväsluoto
ABSTRACT

There is an urgent need to focus on the world’s biggest problems that are not easy to solve. Strategies and solutions need to be designed to fit the characteristics of modern societies, such as unpredictability and rapid change. The public sector has its role in answering the grand challenges. The paradigm of New Public Governance promotes public policymaking, highlighting relationships and partnerships in complex societies and co-creation as the service model. These issues are studied in the context of social and healthcare services in Finland, where the factors such as the aging population, decreased tax revenues, digitalization of society, and high expectations of users toward personalized services have challenged systems’ sustainability. Social and healthcare services provide a good example of a field where the services are intangible and fundamentally co-produced, the current system is highly complex and path dependent, and there is a need for a paradigmatic change. However, experiments in introducing co-creation have been scattered, and a transition toward the use of co-creation in service production on a wider scale has not happened. What has been missing is the systemic view of the change and how it could be promoted.

This dissertation studies whether co-creation can truly renew public sector social and healthcare services in Finland and is based on four published peer-reviewed articles. The results show that the system can be reformed, but there is a need for systemic changes to utilize the potential of co-creation. Required systemic changes have been identified from the previous literature, and new knowledge has been produced based on empirical studies that are introduced in Papers 1 and 2. The results indicate the need to promote learning and how to co-create with users, initiate long-term policy actions, and understand change as a constellation of different changes in the system.

In addition, the dissertation studies whether the change toward co-creation can be promoted. For this purpose, a research stream of transition studies was included in the dissertation to study whether its theoretical and practical frameworks of multi-level perspective, transition management, and strategic niche management could provide tools to understand and promote the change. Transition studies claim that
the social and healthcare system should be understood from the systemic perspective and viewed as a constellation of interconnected elements. Transition is seen to come about when the dynamics at the levels of landscape, regime, and niche level link up and reinforce each other. In the dissertation, it is argued, based on Papers 3 and 4, that co-creation of Finnish social and healthcare services could be understood and promoted by the use of transition studies and provides examples of promoting double-loop learning and supporting policymakers to evaluate the impacts of change.

Tämä väitöskirja tutkii, voiko palveluiden yhteiskehittäminen todella uudistaa sosiaali- ja terveyspalveluja Suomessa perustuen neljään vertaisarvioituun artikkelin. Tulokset osoittavat, että järjestelmän uudistaminen on mahdollista, mutta vaatii toteutuakseen systeemisiä muutoksia yhteiskehittämisen potentiaaliin hyödyntämiseksi. Väitöskirjassa on tunnistettu tarvittavat systeemiset muutokset aiemman kirjallisuuden pohjalta, ja uutta tietoa on tuotettu empirisessä tutkimuksessa, jotka esitellään artikkeleissa 1 ja 2. Tulokset osoittavat tarpeen edistää oppimista ja ymmärrystä siitä, miten palveluita voidaan yhteiskehittää käyttäjien kannsa. Lisäksi muutosta tulisi ymmärtää useina samanaikaisesti tapahtuvina uudistuksina, joita tulisi tukea pitkäjänteisillä politiikkatoimenpiteillä.

Lisäksi väitöskirja tutkii, voiko muutosta kohti yhteiskehittämistä edistää. Tämän kysymyksen ratkaisemiseksi hyödynnettiin transitiotutkimuksen piirissä kehitettyjä teoreettisia ja käytännöllisiä viitekehyksiä monitasomuutoksen mallista (multi-level
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Contributions of the author


J.L. was the main author, and M.T. acted as the supervisor of the paper. The introduction of the theoretical approaches was provided by M.T. and K.H. J.L. was responsible for the empirical part of the study. She collected and analyzed the data and carried out the results together with K.H. A discussion of the results was done in collaboration with all authors.


J.L. was the main author of the paper. M.T. guided the work as a supervisor and was responsible for the theoretical part of the paper. The empirical part was done in cooperation with all the authors, but J.L. was responsible for data collection and analysis. The research results and discussion part were formulated together with all the authors.


J.L. was the main author of the paper and provided a theoretical approach to the societal embedding of innovation. The empirical part of the study was conducted in collaboration with J.H. and J.T., and K.V. J.L. was responsible for the development of the method based on the societal embedding of innovation. J.L. carried out the empirical analysis. All the authors participated in the development of the gamified method.

J.L. was the main author of the paper. She was responsible for the theoretical analysis of the transition studies. She also carried out the empirical analysis with the help of A.S., who was responsible for the description of the research methods. J.M. was responsible for the health economic decision modeling and the results of the scenarios. The online tool was developed in collaboration with J.L. and J.M. The results were formulated in collaboration between J.L., J.K., J.M., and A.S. All the authors participated in formulating the discussion and conclusion, but J.L. had the main responsibility for the section.
1 INTRODUCTION

Grand challenges and wicked problems such as climate change and an aging population have become focal areas of interest for academia (e.g., Geuijen et al., 2019; Ludwig et al., 2022) and have been in the eye of the public debate over the last few decades. It has been acknowledged that there is an urgent need to focus on the world’s greatest problems that are not easy to solve. Strategies and solutions need to be designed to fit the characteristics of modern societies, such as unpredictability and rapid change (Kuhlmann & Rip, 2014). To meet these challenges, there is a need for simultaneous development of organizations, technologies, services, and multiple network relationships (Gallouj, 1994, 2002; Harrisson et al., 2010; Rubalcaba et al., 2011; Windrum & García Goñi, 2008). Solutions to these problems often need to be developed together with a large group of stakeholders to ensure that they meet different expectations. Digitalization offers new possibilities to fulfill these expectations and renew the way society works. Nonetheless, the changes need to be systemic by nature, meaning multiple innovations at different levels of society.

The public sector plays a role in answering grand challenges and developing innovations. However, there has been an increasing imbalance between income and expenses in the public sector (Mättö, 2019). To improve public well-being, results from policies must deliver social outcomes more efficiently with fewer resources (Fox et al., 2020). At the same time, the current way of producing services does not respond to the needs of citizens, and their demands are increasing. The public sector must renew itself, and this has happened, for instance, through projects or reforms aiming to reinvent and modernize services to fit current demands (Newman & Clarke, 2009).

There are paradigmatic views that represent how the nature of the public sector and public services has been understood (Gow & Dufour, 2002; Hartley, 2005; Torfing et al., 2019). Public sector paradigms have generally been categorized as Traditional Public Administration (PA), New Public Management (NPM), and New Public Governance (NPG). These paradigms have coevolved and have been layered on top
of old ones during the past 40 years and provide different approaches to the
generation, adoption, and implementation of public services (Langergaard, 2011;
Osborne, 2006; Torfing et al., 2019). Today, NPM is the dominant public paradigm,
together with surviving elements of PA, but a new paradigm of NPG is emerging.
This paradigm highlights relationships and partnerships in complex society and co-
production and co-creation as the service model (Newman & Clarke, 2009; Osborne,
2006).

This dissertation focuses on co-creation that has been studied in the service
management literature but also draws lessons from the literature from public
management and public administration to study the systemic challenges behind the
use of co-creation in public services. Public administration and public management
literature sees public services as goods that service professionals design, plan, and
produce, and service users are invited to participate in this process (Osborne &
Strokosch, 2013). On the other hand, the service management literature challenges
this assumption by viewing co-production as a core component of service delivery.
This viewpoint highlights the role of public service users in service production. Users
can be seen as citizens, users, clients, or customers, depending on their position in
the system (Bovaird & Löffler, 2003; Savoie, 2002).

Service users and value co-creation are highlighted in the public service logic (PSL)
approach (Osborne, 2018). The idea of value co-creation originates from service-
dominant logic (SDL) created by Vargo and Lusch (Lusch & Vargo, 2006, 2014;
Vargo & Lusch, 2004) and has been developed to suit the characteristics of the public
sector (e.g., Osborne, 2018; Osborne et al., 2015). The main idea in PSL is that public
service users create value through their interaction with public services and public
service organizations (PSOs) co-produce this with them. Value co-creation is
understood in this dissertation as efforts by “service users” to realize value in their
own life. This definition is used in Go Jefferies et al.’s (2019) study, where they also
see that service users use their resources to alter the services to make them fit their
purposes and thus raise service innovation and experimental value co-creation by
individuals as the bases for system-level change.

One of the sectors where the co-production and co-creation of services have been
seen to have enormous potential is social and healthcare (Jaspers & Steen, 2019;
McMullin & Needham, 2018; Nederhand & van Meerkerk, 2017, 2018). Social and
healthcare services provide a good example of a field where a fundamental change
is needed, but the current system is highly complex and path dependent, offering interesting opportunities to study the co-creation of services. In social and healthcare, the services are intangible, and professionals and users co-produce the service together. Because of these characteristics, the introduction of co-created services into social and healthcare services has received great interest in public service research (Williams et al., 2016). However, even with the importance of change and the possibilities that the NPG paradigm provides, there is not yet evidence of the positive results that were expected (Jo & Nabatchi, 2019; McMullin & Needham, 2018). There are a number of barriers preventing the change to co-creation in social and healthcare. For example, the role of the professions has traditionally been very strong (Alvesson, 2004; Löwendahl et al., 2001), and the risk of failure can be seen to minimize innovation (Osborne et al., 2020).

With this background, the question becomes, does co-creation hold the possibility of truly renewing public-sector social and healthcare services? In addition, how can these processes be promoted? Incremental improvements in the public sector try to meet changing needs, but there is also a need for systemic innovations and change. Systemic innovations can be defined as a type of innovation where value is created only when the innovation is accompanied by complementary innovations (Chesbrough & Teese, 1996; Takey & Carvalho, 2016) or as a process that integrates stakeholders in creating and formulating innovation to answer the needs of society, nations, organizations, and individuals (Midgley & Lindhult, 2017).

To understand systemic change and how it can be promoted, this dissertation uses the conceptual framework of socio-technical systems (Geels, 2002, 2004; Geels & Kemp, 2007; Geels & Schot, 2007; Rip & Kemp, 1998). To understand the transition from one system to another, transition scholars (e.g., Geels, 2002; Geels & Kemp, 2007; Geels & Schot, 2007; Rip & Kemp, 1998) developed a multi-level perspective (MLP), which consists of three levels: landscape, regime, and niche. A transition can only come about when the dynamics at these levels link up and reinforce each other. The different levels in MLP help understand the complex dynamics of socio-technical change. Transition studies have different theoretical frameworks that all have a systemic perspective and originate mostly from innovation studies. These include MLP, transition management (TM), and strategic niche management (SNM) (Köhler et al., 2019). The technological innovation system (TIS) approach will be excluded from the discussion because the focus is mostly on technological aspects and transition.
TM and SNM (Elzen & Wieczorek, 2005; Kemp, 1994; Kemp & Rotmans, 2003; Rip & Kemp, 1998) have been developed to support the governance of transitions. TM and SNM acknowledge that transitions cannot be governed solely from a top-down perspective, and the participation of multiple actors is needed. In transitions, this cooperation is commonly hindered due to the vested interests of actors in existing socio-technical regimes. TM is interested in the dynamics of structural change in societies and the question of when and how transformation can be initiated, facilitated, and influenced (van der Brugge & van Raak, 2007). TM can be seen as a new type of long-term policy with a conceptual framework and concrete policy experiments (Voß et al., 2009). On a practical level, TM can be defined as a process influencing governance activities that will lead to change (Loorbach & Rotmans, 2010). TM tries to influence, coordinate, and bring together actors and activities through a TM cycle (Loorbach & Rotmans, 2006, 2010; van der Brugge & van Raak, 2007). Whereas TM focuses on supporting system-wide change, SNM emphasizes creating and supporting niches. The idea behind this approach is that change is locked into dominant regimes, and SNM offers a method to accelerate a transition into a new regime by creating and/or managing niches. SNM has been regarded as a research model, as well as a policy tool (Raven et al., 2010). As a research model, it has been used to better understand the role of transition experiments, and in terms of policy tools, SNM has been applied to inform policymakers for future sustainability policies.

1.1 Changes in public policymaking in the context of social and healthcare services

In this dissertation, changes in public policymaking and the use of co-creation are studied in the context of Finnish social and healthcare services. The development of social and healthcare services is linked to the development of the public sector because, in most countries, these services are at least partially public activities and publicly regulated. Therefore, it can be presumed that long-term trends in social and healthcare services are interlinked with the way the public sector and its tasks have been understood. In Finland, public policymaking in the social and healthcare system has followed the international paradigms of PA, NPM, and NPG. For example, Meriluoto (2018) has noted that Finland has adopted a participatory emphasis in public governance in the 21st century. In their study, Häkkinen and Lehto (2005) described how the Finnish social and healthcare system has developed from public
municipality doctors to a tax-funded and publicly provided care system and toward a system where public service providers can purchase services from public or private organizations or nongovernmental organizations (NGOs). The reform initiatives focusing on the efficiency of social and healthcare services and dismantling the heavily centralized planning and earmarked state subsidy systems were done in the 1990s and followed the ideas of NPM. Since the 1990s, there have been demands for service users to take responsibility for their own health and play a more active role in their health, as described in the paradigm of NPG (Rantamäki, 2017).

Grand challenges have created a need for paradigmatic change in the Finnish social and healthcare system. One of the grand challenges in Finland is the aging population, which is aging faster than in other European countries (Rissanen, 2019). In addition, it has been stated that, to achieve a socially sustainable society, the focus should be shifted to actively promoting health (instead of merely treating diseases) and preventing social and health-related problems (Ministry of Social Affairs and Health, 2013). Furthermore, social and healthcare can be seen as an interesting sector in public policymaking where the system is complex and strong path dependencies have slowed the changes. McMullin and Needham (2018) state that co-creation is an inclusive approach that can enhance healthcare services to meet the challenges of the aging population, shrinking public finances, and increased demands for personalized services. Co-creation is also a required element in healthcare where medical professionals and users co-produce the service.

Continuing with the challenges, technological and medical advances are bringing cost pressure to the current system. For example, digitalization has had a significant impact on the social and healthcare system and the way services are offered to citizens. The use of digital and electronic services is high in Finland. Medical and prescription data are collected in the national databank (Kanta), to which social and healthcare professionals and users have access. These changes have affected ways of working, processes, resource allocation, policies, and how health is understood, experienced, and measured (Virtanen & Stenvall, 2018). Due to this, there are major changes in the political, economic, social, technological, environmental, and legislative fields that have an impact on public policymaking (Bovaird & Löffler, 2003). Next, the current structure of the social and healthcare system in Finland is briefly described, as well as the reform that was implemented at the moment this dissertation was written.
The social and healthcare system in Finland is based on public services to which every citizen is entitled. They are publicly funded, and the Finnish Social Insurance Institution (Kela) reimburses a part of the costs of the use of private medical practitioners. Healthcare services are divided into primary services and specialized care. Primary healthcare services are provided at health centers (total 142) and specialized care in 20 central hospitals and five university hospitals (e.g., Rissanen, 2019). In 2019, Finland’s healthcare expenditure was 19.2 billion euros (STM, 2023). The Ministry of Social Affairs and Health (STM) is responsible for the legislation and policymaking of social and healthcare. The steering of social and healthcare is carried out together with organizations working under STM, which include the National Institute for Health and Welfare (THL), the Finnish Institute of Occupational Health (TTL), the Finnish Medicines Agency (Fimea), the Radiation and Nuclear Safety Authority (STUK), and the National Supervisory Authority for Welfare and Health (Valvira).

There are identified challenges with the provision of social and health services in Finland. Rissanen (2019) has noted considerable regional differences in access to primary healthcare and social services. The differences are due to the varying practices in municipalities of structured services and the availability of medical practitioners. In addition, the increase of the aging population has shifted elderly care to home-based services, where the availability of services has faced problems. An interesting notion has also been the public investment in social and healthcare, particularly focusing on healthcare buildings. It has provided the opportunity for cooperation between basic services and specialized medical care, but the focus has been on specialized medical care. In addition to the problems of equal access to services, the birth rate in Finland is falling, resulting in a decline in the working-age population. Due to the decrease in tax revenues with a growing number of older people, there is a need for reform to ensure a sustainable social and healthcare system.

To overcome these challenges, the social and healthcare system in Finland has been systematically developed over the last decades, where the objective has been to achieve and maintain a socially sustainable society (Ministry of Social Affairs and Health, 2013). However, it has been acknowledged that there is a need for a larger reform, and this has been debated for more than a decade. In June 2021, the Finnish Parliament adopted legislation on establishing well-being services counties and reforming the organization of healthcare, social welfare, and rescue services (see
The health and social services reform transferred the responsibility for organizing health and social services to self-governing well-being counties. The responsibility was transferred to well-being service counties on January 1, 2023. There were changes to health, social, and rescue services in the way they are organized, produced, and funded. The new well-being service counties are public law entities that exercise autonomy within their areas. There are 21 well-being service counties in addition to Uusimaa with four well-being service counties. The activities are mainly funded by the central government. Services can be provided in several ways: well-being service counties can produce services by themselves, in collaboration with other counties, by purchasing services from private companies or NGOs. Even though social and healthcare services are mostly publicly organized, private organizations and NGOs play an important role in service production.

The objectives (Finnish Government, 2022a, 2022b) for this reform are to reduce inequalities, improve the availability and accessibility of services, ensure the availability of skilled labor, curb the growth of costs, and improve security. In the vision of Finnish social and healthcare, there will be a one-stop shop for services with multidisciplinary teams where digital and mobile services are used in service production as well as in self-management of health. The reform also aims to promote preventative and proactive work in social and healthcare services. In addition, the participation of citizens is noted in the reform, and the aim is to have more user participation in developing the services.

The reform has changed the structure of the Finnish social and healthcare system (Finnish Government, 2022a, 2022b), but it will not automatically change the current practices and how services are produced. Even with the reform, there is an urgent need to change the service system to meet current and future challenges. The transition toward co-created social and healthcare services requires an understanding of the systemic nature of change and active development toward its goals. The next section will present the research gap in the current literature and the research questions for this dissertation to study these phenomena.
1.2 Research questions

As mentioned earlier, the public sector is facing challenges that require systemic innovations and change, but change appears to be slow. Research on public services has tried to explain why the paradigm of NPG has not yet become a prominent paradigm, even though the need for a new type of governance is evident. Social and healthcare is an example of a field where the use of PA and NPM still prevails, but there is a need to renew practices based on the ideas of NPG. The goal is not just to develop organizational processes to meet service users’ needs but to transform the service in a way that meets expectations and, at the same time, fulfills the societal function that it has.

Realizing co-creation is difficult, especially if the aim is to create innovations to change the system structure. Go Jefferies et al. (2019) and Jo and Nabatchi (2019) have noted that research into public services has focused mostly on describing user involvement in public service production and doing research on the facilitators and barriers to effective co-production. In addition, Park (2020) has pointed out that the advantages of using users’ experience and knowledge are recognized in the field of social and healthcare, but clinical or organizational practices are still prevalent. This dissertation is interested in whether co-creation can transform the current social and healthcare system in Finland. Public policy research has identified reasons why NPG has not been a successful model, such as lack of time and resources by the users and professionals and lack of sustainable funding (Fleming & Osborne, 2019; Torfing et al., 2019; Vanleene et al., 2015). However, public policy research has not provided a systemic understanding of how to promote systemic innovations and how transformative changes should be studied.

To respond to this gap, an approach is built in this dissertation by using literature on systemic change from transition studies. Geels and Turnheim (2022) note that system transition is widely acknowledged and debated in the public and academia. Transition studies could also benefit from the use of policy studies to better understand the coevolution between policy and socio-technical change (Kern & Rogge, 2018). However, transition studies and their methods have not been used in public policy research. The question driving the research in transition studies has been, what system transitions are and how do they come about? Transition studies try to understand the complex nature of change and, based on this understanding, offer tools to promote systemic innovations and change in the system. From this
perspective, they offer public governance and service management research a new way of understanding the change toward co-created services. In addition, transition studies are moving toward solving the problems of society and not just describing the process of transition (Köhler et al., 2019). This study is interested in whether transition studies can help understand the systemic change required for a change toward the use of co-creation in social and healthcare services in Finland. When studying these questions, it also aims to develop methods used in transition studies to promote change based on the needs of the system.

Transition studies have mostly focused on sustainability issues and environmental problems such as climate change, but the ideas are compatible with other domains as well. For example, Köhler et al. (2019) have noted that there has been an expansion in other societal domains, and the field has diversified in terms of topics. Even though there are a few examples (e.g., Broerse & Grin, 2017; Kivisaari et al., 2004, 2013; Pekkarinen & Melkas, 2019; Pekkarinen et al., 2019), social and healthcare has not been in the wider interest of the research stream. However, the results from this dissertation can provide new insight into the socio-technical change where the innovations can be viewed to be based on services and service innovations (as described in SDL and PSL) instead of emphasizing technological innovations, which are often at the core in transition literature. Focusing more on value co-creation can give transition studies a perspective on the importance of users in transition processes.

The summary at hand will bring all these aspects together. The dissertation’s research questions are as follows:

RQ1: Does co-creation offer possibilities to reform public social and healthcare services in Finland?

RQ2: How can transition studies help understand and develop public social and healthcare services?

The next section in this introduction will summarize the papers and the research projects in which the papers have been produced.
1.3 Original research publications

The dissertation consists of four published papers that focus on different viewpoints on the changes in public policymaking toward the co-creation of services in the context of social and healthcare services. Figure 1 presents the focus areas of the papers, their timetables, and the projects in which they were carried out. These topics are then discussed in more detail in the following paragraphs.

Figure 1. Dissertation papers, timetables, and projects.

Paper 1. “Child and family services in the digital era. New opportunities for multi-professional collaboration and the empowerment of users” studies the issue of cross-professional work and the empowerment of service users through the use of digital tools. It discusses the issue of developing social services by integrating professionals and users through digital platforms. In the empirical case, it presents a city that was participating in a nationwide project that aimed at promoting local experiments as an alternative to centralized planning in the renewal of public services. An integrated model of well-being included a digital platform as a mutual information and communication channel between citizens and different professionals. The digital platform collected all of the service plans made for the users. The results of the paper point out that,
even though the development concept suits the ideas of value co-creation, the actual implementation may not succeed. In this case, it highlights that, in order to co-create services, professionals need sufficient resources and clear frames for their development objectives. A lack of expertise in the co-creation of services at the local level was a significant problem. In addition, technological readiness in social services may not yet be at a sufficient level to utilize the full potential of digitalization, and this needs to be acknowledged. The paper also notes that the context matters, and practices need to be designed based on the users’ needs. In this case of social services, the users had very sensitive and personal issues, and they were skeptical of using a new service model. This notion highlights the issue of user participation in the co-creation process.

Paper 2 “Innovation by Experimenting in Public Services” continues studying the same empirical case as Paper 1 but focuses more on experimental development in the public sector and the challenges linked to it. As Paper 1 revealed the difficulties in establishing a new service model for child and family services, Paper 2 aims to understand the preconditions for experimenting in the public sector and thus comprehend why the studied experiment failed. The main findings highlight the discontinuity of public policies and changing policy agendas at the national level. In this case, it led to mistrust at the local level. At the same time, local-level managers did not have the necessary skills in innovation management needed to implement the experimental project. There was also a lack of communication and learning structures in and between projects at the local and national levels. Plans for accelerating the dissemination of good practices were not made. This was an important notion since the lack of learning structures meant that the wider impacts on the service system were lost.

The first and second papers studied the development of public services through experimental development and the problems of co-creating services. One of the problems discovered was the lack of learning structures in the studied organization, which caused problems in creating new services and having wider impacts on society. The third paper “Gamification as an enabler of mutual learning in complex healthcare systems” examines the change process in organizations and whether change can be promoted through gamified solutions. As Papers 1 and 2 studied the issue of co-creation, Paper 3 aims to develop a solution for organizations to promote dialogue and mutual learning in complex social and healthcare organizations undergoing change. The study aims to create a systemic view of change based on the ideas of transition studies.
in two case studies by acknowledging relevant actors in the change process and seeing the change from different perspectives. In the empirical part, the paper examined two social and healthcare organizations in Finland that are developing and implementing a technological innovation and a new service model. The results revealed that gamified solutions helped promote double-loop learning, which is required for systemic change. The method also inspired and gave means to the participants to enhance their systemic understanding of their organization and to improve dialogue.

Papers 1 and 2 also pointed out that the discontinuity of public policies prevents the successful co-creation of services. The fourth paper “Digitalization as an Engine for Change? Building a Vision Pathway towards a Sustainable Healthcare System by Using the MLP and Health Economic Decision Modelling” continues from this notion. The study aims to provide a means to tackle the issue of discontinuity by developing a vision pathway for the future and providing policymakers with an online tool to estimate the impacts of policy actions. The study focuses on the prevention of type 2 diabetes (T2D) in Finland. Methodologically, it combines qualitative research on developing a vision pathway with quantitative forward-looking scenarios and health economic decision modeling with forward-looking scenarios. Due to the methodological differences, the presented study focused on a single theme in a wider transition toward the prevention of T2D. Digitalization was selected because it was identified as a cross-cutting theme needed within the overall systemic change. The study showed that the use of vision pathways can possibly steer change in public policymaking toward co-created services. The presented tools can help visualize a complex system and provide a means to assess the impacts of different policy initiatives.

The data for the dissertation were collected in three research projects. Figure 1 presents the projects and their timetables. For Papers 1 and 2, the research work was carried out in the Revolution of the Service Economy—Human Being at the Core of Digitalization (2015–2017) project. The project focused on the digital service innovations of the Finnish public sector and the third sector in the contexts of early childhood education, social and healthcare, housing for older people, and the everyday life of young people. The Management of Complex Integrated Care Systems through Simulation and Gamification project provided the platform for the research work of Paper 3. This project was carried out between 2014 and 2016. The aim was to use simulation techniques, gamification, and ideas of complexity to support integrated care system improvement. Paper 4 was produced in the Stop
Diabetes—Knowledge-Based Solutions (2016–2019) project, where the project aimed to empower individuals at increased risk of T2D to adopt and maintain a healthy lifestyle and to achieve this by combining an individual-level intervention with changes in the living environment to support healthy behaviors and by identifying societal barriers and facilitators to the implementation. In addition, it studied how a healthy lifestyle can be supported by individual-level solutions utilizing digitalization and by altering the living environment to make healthy choices preferable and easier.

1.4 Structure of the dissertation

After the introduction chapter, the dissertation continues with a literature review of the theoretical perspectives applied in this dissertation. It presents how public policies have been understood and how they have evolved toward emphasizing co-creation. Next, co-production and co-creation are presented as they hold a promise to better answer the wicked problems of society and to renew social and healthcare. It also presents identified systemic challenges in the adoption of co-creation in the public sector. The third chapter introduces systemic innovations and socio-technical change as an approach to understanding the difficulties of creating change in society. MLP, TM, and SNM are discussed in more detail as they are at the core of the transition literature. The section concludes with a presentation of future directions in transition studies. The fourth chapter introduces the methodology and empirical context of the dissertation. The ontological and epistemological approaches are first introduced, followed by the research approach and strategy and then data acquisition and analysis. The research results of the four research papers are presented in the fifth chapter of the dissertation. The final chapter discusses the concluding remarks of this dissertation, including answering the research questions based on theory and empirical study, as well as the theoretical contribution of this dissertation, fulfilling the scientific criteria and limitations of the study, suggestions for further research, and, finally, the managerial and policy implications.
2 CHANGING PUBLIC POLICIES IN THE ERA OF COMPLEXITY AND CHANGE

This theoretical chapter starts with an introduction to the founding principles of public policymaking. It continues presenting the discussion on public sector paradigms of Traditional Public Administration (PA), New Public Management (NPM) and New Public Governance (NPG) and the changes that have happened during the past decades. NPG is an emerging paradigm that highlights cooperation between actors and co-creation as a service model. It has been an interest of scholars (e.g., Brandsen et al., 2018a, 2018b; Ostrom et al., 1978) and is presented next in-depth. Furthermore, PSL is discussed in this theoretical presentation as it highlights service users’ role in value co-creation (Kinder & Stenvall, 2023) and locates them at the core of the change.

To renew the public sector toward co-creating services, innovations are needed. Previous literature presented in this chapter has identified a number of benefits that can be produced when the services are co-produced. However, innovating in the public sector is not straightforward as the results are not known beforehand and there is always a risk of failure (Osborne et al., 2020). In addition, it is sometimes difficult to demonstrate the unambiguous success of an innovation (Hartley, 2005). These are an example of the barriers that are studied and presented in Section 2.4.2. Moreover, systemic changes are needed to renew public policymaking; these are identified and categorized at the end of this chapter.

2.1 Public policymaking

When studying changes in public policymaking, it is important to specify what is meant by “public.” “Public” does not have a single meaning, and it can be understood in different ways. Bovaird and Löffler (2003) define public domain as an arena in which public choice is exercised in order to achieve a collective purpose. The focus of this dissertation is on public services (in social and healthcare), which also have different definitions. The dissertation definition of public services follows the
definition by Osborne and Strokosch (2013, p.32), in which they are described as the “services that are created through the public policy process and regulated by (central or local) government - but which can be provided by a range of PSOs in the public, third and private sectors.” There can also be a distinction between the public sector and the private sector, where ownership (all citizens versus individual ownership) and motivation (social purpose versus profit) are different. As some public services can be delivered by private or third sector actors, the public can also mean that the provider must observe and fulfill some form of public service obligation (Bovaird & Löffler, 2003).

Public services are, in many cases, managed or governed through the interaction of actors, but their definitions vary. Bovaird and Löffler (2003) see that public management can be understood as an approach that uses managerial techniques to increase the value for money achieved by public services. Additionally, Savoie (2002) defines public management as a dynamic mindset of the use of management techniques. It focuses on the measurement of results in terms of outputs. On the contrary, Bovaird and Löffler (2003) see that public governance is the way different actors interact with each other in order to influence the outcomes of public policies. Torfing (2005) feels that governance can be understood as the attempt to govern public and private interests, actions, and resources. On the other hand, Klinj and Koppenjan (2000) describe governance as the “directed influence of social processes.” Kooiman (2002) notes that governance is used in many different sub-disciplines of the social sciences, and therefore the definition varies. However, he sees that an emphasis on the rules and qualities of systems, cooperation to enhance legitimacy and effectiveness, and attention to new processes, arrangements, and methods are the common elements in the different definitions. Even though the definitions have different wordings, they all see governance as a form of cooperation between different actors. In addition, Bovaird and Löffler (2003) see that, in public governance, the way decisions are reached is important and value is not dependent on the output that is reached. However, despite differences in the definitions of public management and public governance, they should be seen as separate but interconnected. Bovaird and Löffler (2003) see that both approaches are needed and co-exist to produce and increase the quality of public services.
2.2 Public sector paradigms and changes

Public services have always been a subject of projects to reform, reinvent, and modernize them to fit current demands (Newman & Clarke, 2009). However, there are three paradigmatic views that have been generally identified: PA, NPM, and NPG (or, in some papers, Network Governance). These changes have taken place during the last 30–40 years (Langergaard, 2011). Even though there is a common understanding of the paradigms, it should be noted that different public sector paradigms coevolve and are layered on top of old ones (Osborne, 2006; Torfing et al., 2019). In addition, the complexity in public sector management means that the paradigms are used in parallel (Torfing et al., 2019), and most countries have elements of all three paradigms (Bovaird & Löffler, 2003). Because of this notion, for example, Osborne (2006) argues that NPM is not a paradigm and is actually a transitory stage from PA to NPG. Furthermore, Gow and Dufour (2002) have analyzed NPM and whether it should be characterized as a paradigm. They conclude that NPM has some elements that meet the characteristics of a paradigm, but on the other hand, it cannot be seen as a superior theory or a coherent unified view. They also add that PA and NPM should not be seen as rival paradigms, and they both have a contribution to make.

Whether or not these modes of governance can be identified as a paradigm, they represent a change in the way the nature of the public sector and public services has been understood (Gow & Dufour, 2002; Hartley, 2005). In the next sections, the general ideology behind these paradigms and how they are understood in the public administration literature are summarized. Table 1 summarizes their central characteristics based on Hartley (2005) and Osborne (2006), with slight modifications.
Table 1. Elements of Traditional Public Administration, New Public Management, and New Public Governance (modified from Hartley 2005; Osborne 2006)

<table>
<thead>
<tr>
<th></th>
<th>Traditional Public Administration (PA)</th>
<th>New Public Management (NPM)</th>
<th>New Public Governance (NPG)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Theoretical roots</strong></td>
<td>Political science and public policy</td>
<td>Rational/public choice theory and management studies</td>
<td>Organizational sociology and networks theory</td>
</tr>
<tr>
<td><strong>Context</strong></td>
<td>Stable</td>
<td>Competitive</td>
<td>Continuously changing</td>
</tr>
<tr>
<td><strong>Focus</strong></td>
<td>The policy system</td>
<td>Intra-organizational management</td>
<td>Inter-organizational governance</td>
</tr>
<tr>
<td><strong>Emphasis</strong></td>
<td>Policy implementation</td>
<td>Service inputs and outputs</td>
<td>Service processes and outcomes</td>
</tr>
<tr>
<td><strong>Governance practices</strong></td>
<td>Bureaucracy, centralization</td>
<td>Market imitation, public–private partnerships</td>
<td>Networks, partnerships, empowered citizens</td>
</tr>
<tr>
<td><strong>Governance mechanism</strong></td>
<td>Hierarchy</td>
<td>The market and classical or neo-classical contracts</td>
<td>Trust or relational contracts</td>
</tr>
<tr>
<td><strong>Relationship with external organizational partners</strong></td>
<td>Potential elements of the policy system</td>
<td>Independent contractors within a competitive marketplace</td>
<td>Preferred suppliers and often inter-dependent agents within ongoing relationships</td>
</tr>
<tr>
<td><strong>Service needs</strong></td>
<td>Expert assessment</td>
<td>Expertise and demand</td>
<td>Context specificity</td>
</tr>
<tr>
<td><strong>Population</strong></td>
<td>Homogeneous</td>
<td>Atomized</td>
<td>Diverse</td>
</tr>
<tr>
<td><strong>Service users</strong></td>
<td>State “subordinates”</td>
<td>Customers</td>
<td>Co-creators, co-producers</td>
</tr>
<tr>
<td><strong>Technology as an enabler</strong></td>
<td>Discipline-based technologies</td>
<td>Lean processes</td>
<td>User-driven processes</td>
</tr>
<tr>
<td><strong>Key concept</strong></td>
<td>Public good</td>
<td>Free choice</td>
<td>Use value</td>
</tr>
</tbody>
</table>

These paradigms are based on assumptions about human needs and societal challenges and provide different approaches to the generation, adoption, and implementation of social and healthcare services. They include diverse understandings of the means to answer the needs and roles of various actors to tackle the mentioned challenges in society (Hartley, 2005; Lévesque, 2013; Moore & Hartley, 2008). More detailed elements from the paradigms are introduced in the next three sections.
2.2.1 Traditional Public Administration

The PA paradigm holds a top-down view of the public sector, which is based on a bureaucratic and rule-based order (Hartley, 2005). In this view, the provision of services is seen as a central task of the public sector, and services are seen as “public good.” Services are often standardized as the basic needs are considered homogeneous (Længsgaard, 2011). Changes are initiated top-down via legislation, innovations are often characterized as large-scale national and universal innovations, and the enabling technologies have been discipline-based (e.g., medical technology) (Hartley, 2005). Because these innovations are top-down managed, they have had the support of legislative and financial staffing resources, and the changes happen quickly (Hartley, 2005). However, Torfing and Triantafillou (2013) note that innovations do not have the capacity for continuous improvement.

PA has been criticized for making citizens passive recipients of public services whose welfare is dependent on public regulation and service provision (Torfing et al., 2019; Torfing & Triantafillou, 2013). In addition, public professionals are assumed to hold the scientific and practical knowledge of what is best for the citizens, and citizens are expected to follow the recommendations of the authorities and do not participate in service production (Pestoff, 2018; Torfing et al., 2019; Torfing & Triantafillou, 2013).

PA was a dominant public sector paradigm in the post-war period and up to the early 1980s, and it had theoretical roots in political science and public policy (Osborne, 2006). The paradigm of PA worked quite well as long as the context was fairly stable. Along with the increasing pace of change and insecure developments in society, the rigidity and inefficiency of the paradigm became evident. This led to the introduction of NPM, which gained a foothold in the Western world more than 20 years ago.

2.2.2 New Public Management established market mechanisms in the public sector

NPM was introduced in the 1980s and had roots in rational and public choice theory and management studies (Osborne, 2006). It was seen that the bureaucracy was no longer working and needed fixing and that a private sector solution was the key to answering the problems (Savoie, 2002). NPM brought market mechanisms and managerial entrepreneurialism to the public context, such as business-type
management, lean processes, a performance focus, and contracting out (Hartley, 2005; Hess & Adams, 2007; Hood, 2002; Torfing et al., 2019; Windrum & García-Goñi, 2008). According to Hood (2002), NPM meant that there were definitions of goals and targets, and success was defined by a set of mostly quantitative indicators. In an increasingly competitive environment, contracting out and partnerships with private companies were also considered important in the public sector. The purchaser–provider split is one example from healthcare due to the emergence of NPM (Hartley, 2005; Hood, 2002). One of the most important ideas in NPM is that patients are understood as customers who have the right to require a high quality of service and free choice (Hartley, 2005; Hood, 2002; Langergaard, 2011; Rhodes, 1997). In addition to expert assessment, service demand was emphasized as an indication of service needs, which were no longer regarded as homogeneous but individual (Hartley, 2005; Windrum, 2008). NPM also meant that innovation was seen as a goal that was not identified in PA (Langergaard, 2011). The benefits of NPM are indisputable compared to the earlier bureaucratic view as it has made customers important actors. Pestoff (2018) identified the role of citizens as users in public services as beneficiaries, consumers, active co-producers, or service providers. NPM sees users as consumers or customers with limited choices, but they do not have a voice, and they have no representation.

In an age of increasing complexity, multiple actors, and the need for open dialogue, NPM has struggled to transform (Newman & Clarke, 2009; Sørensen, 2002). Torfing et al. (2019) state that NPM has not been successful in creating better services and lowering costs. NPM methods, such as lean technologies and performance management, have difficulties in producing additional gains and have increased bureaucracy. In addition, they see that contracting out public services has not created cost savings as the transaction costs have increased due to preparing and monitoring contracts. Newman and Clarke (2009) also see that, in healthcare, for example, public services require more therapeutic and psychological skills to deliver developmental and behavior change strategies. This leads to the evolution of public services where the business and economic side has lost a part of the meaning and complex partnerships and new kinds of relationships with the public are highlighted. However, efficiency and high-quality performance have not disappeared as development goals, but the empowerment of customers or citizens has been added to the aims.
With these downfalls, Torfing et al. (2019) see, together with other public administration scholars, that NPM is no longer a way to improve public services. With this notion, they highlight the question of what comes next, which is something that scholars have not agreed upon. However, there is an emerging paradigm of NPG that highlights relationships, co-creation, and co-production with customers, and this is rising for consideration as the next paradigm in public administration.

### 2.2.3 New Public Governance as an answer to the persistent problems in society?

Torfing et al. (2019) note that, as dissatisfaction grew among citizens, NPM had a window of opportunity to change the public sector paradigm toward the ideas from the private sector markets. It highlighted consumer choice and placed them as customers. What is interesting in Torfing et al.’s (2019) study is the notion that, in the era of NPM, citizens became customers who raised their demands for public services and complained if the service did not meet their standards. At the same time, they did not see themselves as contributors or co-creators to public services, with a duty to contribute to the solutions they were receiving. Torfing et al. (2019) raised the issue of the problematization that it created for the public sector. At the same time, there were growing demands from citizens, pressure to compete with private firms, and pressure from declining funding. Osborne (2018) also argue that NPM failed in practice since it does not pay attention to the increasing complexity, fragmentation, and interdependent world of public services. This led to the rise of a new paradigm, NPG (or, in some publications, Network Governance), to fill the void of NPM.

Torfing et al. (2019) state that the ideas in NPG answer the problems defined in the previous paradigms. Pestoff (2018) notes that NPG considers users as co-producers of services, giving them a greater influence. Users can also be seen to act as service providers when they provide services by or for themselves without public support. This is the case when family members, neighbors, etc., become service providers and professionals are moved as “back-up” agents. In NPG, the role of the state is to steer actions within a complex system rather than control them through a hierarchy or market mechanisms. Supporting innovations by enabling legislation and providing resources for experimentation is at the core of this new approach (Hartley, 2005; Newman & Clarke, 2009).
NPM still has a strong position in the public sector, but the emerging NPG paradigm challenges it as a new way of delivering services through co-production and co-creation and seeing customers as co-producers. However, Torfing et al. (2019) conclude that, even though it fits the empirical trends of public governance, NPG has not so far been able to convince public sector professionals. This has led to a situation where the development and implementation of experiments aiming to create co-created services have faced difficulties.

2.3 Co-production and co-creation

The conceptualization of the co-production and co-creation of public services is ambiguous, and there are debates about its definition, which makes it challenging to compare empirical findings (Brandsen et al., 2018a, 2018b; Fleming & Osborne, 2019). However, today, scholars are positioning themselves more and more between different definitions (Brandsen et al., 2018a). Osborne and Strokosch (2013) have identified three modes of co-production: consumer co-production (based on service management), participative co-production (based on public administration and public management), and enhanced co-production (combines elements of the two models). Nonetheless, as the co-production of public services has raised increasing interest, it is difficult to always capture on which theory the studies are based. In addition to co-production, the co-creation of public services has become of interest to scholars (e.g., Grönroos, 2019; Osborne, 2018). There are debates on how to understand co-production and co-creation, the differences between them, and the benefits they produce to organizing and producing public services (e.g., Kinder & Stenvall, 2023; Trischler & Trischler, 2022). The next section will present the history behind co-production and co-creation, how co-production and co-creation have been understood in public sector research, the emergence of the idea of value co-creation and PSL, and, finally, co-production and co-creation in social and healthcare.

2.3.1 History and development of co-production and co-creation

Ostrom et al. (Ostrom, 1996; Ostrom et al., 1978) published the first work on co-production in the 1970s, but the time was not right for widespread interest, and the idea of co-production was not simply in tune with the time (Brandsen et al., 2018a).
However, these ideas were later picked up by other scholars in the early 2000s; since then, a growing body of academic papers have been published that focus on aspects of co-production and its potential contribution to NPG (Bovaird, 2007; Brandsen et al., 2012). Since the introduction of the co-production of public services, the idea of co-creating services with citizens has also gained a foothold in public sector service research. Co-production and co-creation have been linked to ideas of social innovation and collaborative governance. Torfing et al. (2019) presented the concepts of social innovation and collaborative governance and made a distinction between them and co-creation. They observed that social innovations focus on unmet social needs and are created by social actors in civil society. The public sector does not play an active role in this innovation process as it does in co-creation. On the other hand, collaborative governance is focused on collaboration as a tool for governing rather than as a means to foster innovation (Torfing et al., 2019).

Co-production has been studied from the points of view of service management and public administration perspectives. Alford (2016), Osborne and Strokosch (2013), and Osborne et al. (2013) have pointed out that, as public administration theory has evolved from PA to NPM and toward NPG, the way co-production has been seen has also changed. At first, it was seen as a way to deliver public services with maximum feasibility and, in NPM, as a way to deliver services to consumers with high effectiveness. NPG sees co-production as an open system where the interaction of multiple actors is required to achieve societal goals and to deliver public services. Service users have thus been seen as citizens or clients, consumers, customers, and, lately, co-producers.

Osborne and Strokosch (2013) indicate that the co-production of services challenges traditional ways of delivering services where public officials are in charge of designing and providing services to citizens. In their article, they describe that the role of users is to demand these services and consume and evaluate them. They also point out that public administration literature has shown examples of how users can be added to service planning and production to achieve higher-quality services. Go Jefferies et al. (2019) report that there has been discussion in public administration literature on how active citizen involvement can improve public services and take policy reforms toward utilizing co-production. They add that research focusing on co-production has mostly concentrated on changing the structure of public services to enable user participation in framing problems and solutions. What is interesting in Osborne and Strokosch’s (2013) and Radnor et al.’s (2014) view is the notion that
the central idea has been that co-production has been something external to the delivery of public services and it needs to be designed into the services. It is, in other words, something extra that needs to be added on and is voluntary and not a natural part of the delivery system. This participative co-production does not necessarily change the nature of the operational service delivery but is more focused on the strategic level of service planning.

This basic assumption is challenged in the service management literature, where co-production is a core component of service delivery (e.g., Osborne et al., 2013; Osborne and Strokosch, 2013; Trischler & Scott, 2016). Instead of drawing on lessons from the manufacturing sector, public management theory should focus more on the service management literature. Osborne (2018) also add that service management theory sees that service delivery does not occur only within PSOs or just within networks co-operating with PSOs. Public services are delivered within a large network of different actors, such as PSOs, service users, local communities, and hard and soft technology.

What is notable in the service management literature is that it sees that it is not possible to have public service delivery without co-production, where the experience of the outcome of the service is negotiated between service users and service delivery professionals (Alford, 2016; Osborne et al., 2018). Without co-production, there is no service delivery. Osborne et al. (2018) emphasize that service users do not choose whether to participate in co-production, but they can be aware of it or not. On the other hand, Alford (2016) describes the necessity of co-production in service management to be variable from optional to essential. There can also be resistance to using services such as the criminal justice system, but it is seen as a form of co-production, even though the users do not willingly participate in the delivery. Osborne and Strokosch (2013) observe that this idea originates from the intangible nature of the services in which they are produced and consumed simultaneously. With the development of e-services, this assumption is somewhat challenged by virtual rather than real-time face-to-face services. However, this approach is a step forward toward user empowerment and provides tools to understand the service production process. At the same time, it does not affect public services at the strategic planning level as participative co-production does.

Osborne et al. (2018, p.19) point out that service management theory has also evolved from a service-dominant perspective, where the “value is co-created through
the transformation of service components when a service is utilized at the point of co-production.” This means that a service does not have intrinsic value to its users, but it is co-created through co-production. Before introducing the ideas of value co-creation, commonly used definitions of co-production and co-creation are introduced.

2.3.2 Definition of co-production and co-creation

There are several definitions of co-production, but they have commonalities, such as seeing citizens in the delivery of public services as equal partners with professionals (e.g., Fleming & Osborne, 2019; Go Jefferies et al., 2019), having regular, long-term relationships between professionalized service providers (in any sector) and service users or other members of the community (e.g., Fleming & Osborne, 2019; Osborne & Strokosch, 2013), and seeing that all actors work together to improve the quality and performance of public service delivery and to produce benefits such as active citizenship, enhanced democratic engagement, and social integration (e.g., Fleming & Osborne, 2019). Torfing et al. (2019) have defined public actors as politicians, public managers, or frontline staff, and private actors as service users, voluntary groups, civil society organizations, social enterprises, or private corporations. This list is not all inclusive, and they add that anyone who can contribute to the production of value can participate.

Osborne et al. (2018) have conceptualized (based on Osborne et al., 2016) four distinct processes in public service delivery through which co-production can lead to the co-creation of value (Table 2). The vertical dimension of the framework shows the perspective of co-production as involuntary or voluntary action. The horizontal dimension differentiates public services as an individual service or as a part of the service delivery system. The first quadrant introduces “pure” co-production that is not voluntary but intrinsic to the nature of co-production. The user co-produces the service outcome together with the public service staff/professionals. Even though the process is unavoidable, it does not mean that service users and professionals cannot choose to engage with the process. Active engagement will maximize the potential to create value for service users. The second quadrant focuses on the life experiences and individual user experiences of service users and interacts with the service system as a whole to co-construct the lived experience of the service. The value is created as a result of the experience of the service and how the service impacts their own lives and well-being at an emotional and personal level. In the
third quadrant, co-production is a conscious and voluntary act in which value is created by the conscious co-management of their service experiment. In the fourth quadrant, service users voluntarily co-design the existing public service system and co-innovate new forms of service delivery. Osborne et al. (2018) note that the framework focuses only on service users, and the role of service professionals is not acknowledged here.

Table 2. Conceptualization of the co-production of value in public services from a service management perspective (Osborne et al., 2018)

<table>
<thead>
<tr>
<th>Nature of co-production</th>
<th>Locus of co-production</th>
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<tbody>
<tr>
<td></td>
<td>Individual service</td>
</tr>
<tr>
<td>Involuntary</td>
<td>Co-production</td>
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<tr>
<td>Voluntary</td>
<td>Co-management</td>
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</table>

Torfing et al. (2019) indicate that co-production and its definition are suitable in situations in which the users contribute to the production of a service by doing a predefined assignment. However, they add that co-production does not fit with the new trend in the public sector, where the different public and private actors collaborate to find a new solution to a shared problem. As a result, the co-creation of public services has raised interest. Fox et al. (2020) have noted that co-creation has been seen as a reform strategy in the public sector that can enhance mutual learning and develop new innovations.

Torfing et al. (2019, p. 802) define co-creation in the public sector as a “process through which two or more public and private actors attempt to solve a shared problem, challenge, or task through a constructive exchange of different kinds of knowledge, resources, competences and ideas that enhance the production of public value in terms of visions, plans, policies, strategies, regulatory frameworks, or services, either through a continuous improvement of outputs or outcomes or through innovative step-changes that transform the understanding of the problem or task at hand and lead to new ways of solving it. They also add the following notions. First, co-creation can be found in all functioning areas in the public sector,
as well as in different countries with different political cultures. Second, due to the intangible nature of public services and the simultaneous process of production and consumption, public services provide great opportunities for co-creation. Finally, public sector providers and consumers bring their resources and capabilities to the co-creation process, and both parties have an interest in maximizing the value created.

Co-production and co-creation have a few similarities. Brandsen and Honingh (2018) note that both focus on the direct input of citizens during production, and both refer to collaboration between professionals and citizens. In addition, both refer to active input by citizens in shaping services, not just receiving or using a product. There are also identified differences between the two terms. There is a perception that co-production is an inherent part of the production relationship and that it is not a question of choice (Osborne, 2018). Co-creation thus can be seen to concern services at a strategic level, for example, in planning or initiating a service (Brandsen & Honingh, 2018).

In addition, Go Jefferies et al. (2019) have outlined the different definitions of co-production and co-creation. One view is to separate them according to the intensity of active involvement. In that view, co-production may be unconscious or involuntary interaction, and co-creation is reserved for active involvement and co-design (e.g., Osborne et al., 2016). Another view is that co-production involves provider-led attempts to engage service users, and co-creation is the value that the service beneficiaries realize in their everyday usage of the service. In the latter definition, the citizens’ roles are not defined by the opportunities presented by the providers but are formed in relation to the lifeworld of the users. In this view, the co-creation of value does not happen only when service users are involved in the implementation of the service. Osborne et al. (2018) note that an organization can only promise a certain process of services. The actual service experience is dependent upon the service enactment, where the user’s expectations and the experience of the service collide. They see that this determines the satisfaction of the experience and the performance and outcome of the service encounter. The interaction of expectations and actual experience is where the value is co-created. It can be understood that co-production leads to the co-creation of value for service users. Co-production is not dependent on voluntary or conscious intent, and it is the same thing for value co-creation (Osborne et al., 2018).
The recent literature has urged a move away from models that have been developed by manufacturing organizations toward PSL that focuses on the value co-created in public services (Go Jefferies et al., 2019; Osborne, 2018). Go Jefferies et al. (2019) argue that, even though public services differ from for-profit services, learnings from marketing and consumer research might help public service research to move away from provider-centric views. In the following section, value co-creation in public services (which has borrowed ideas from SDL) will be discussed more thoroughly (Lusch & Vargo, 2006, 2014; Vargo & Lusch, 2004).

2.3.3 Value co-creation and public service logic

Go Jefferies et al. (2019) note that the research in co-production has focused on describing examples of user involvement in public service production and has shed light on the facilitators and barriers to effective co-production. However, these are examples of purposeful user involvement that happens outside normal service provision. They see that the role of users is broader than just participating in initiatives provided by public agents. This problem has been identified in the literature, but the focus has still remained on co-production projects. Furthermore, Osborne (2018) notes that, in co-production, PSOs are seen as dominant, and the logic behind the production of services is linear and based upon product-dominant conceptions. PSOs have been seen to create value through their performance, and the focus has been on how to add service users to this process. This has led to the situation where the emphasis of the roles, experiences, and values of users is needed, which are often neglected in the approaches to public service research that have focused on improving intra-organizational processes.

The public service-dominant logic (PSDL) and SERVICE frameworks have been developed in recent years (Osborne et al., 2015). The approach has roots in SDL developed by Lusch and Vargo (Lusch & Vargo, 2006, 2014; Vargo & Lusch, 2004). Osborne (2018) sees that the nature of public services is service dominant instead of product dominant. He also notes the intangibility and process-based nature of public services and sees users as co-producers and co-creators of value. In his paper, he notes that service firms do not create value for customers and they can only make a service offering with the potential of creating value. Value itself is created when the customer uses the offering and makes use of the life experience and social context they have. Firms act as value co-creators by facilitating the creation of value for the service users and, at the same time, use this interaction to create value for themselves.
In addition, Go Jefferies et al. (2019) have used the ideas from Vargo and Lusch (2004). They emphasize that all service use is the active co-creation of value and co-production is an element of co-creation. The definition of value co-creation is centered on user-centric ideas, and it sees users as resource integrators. Value, in this definition, is something that is determined by the service beneficiary during use. Using SDL, customers are placed at the center of the co-creation of value.

However, Osborne (2018) has pointed out differences between SDL, which focuses more on private services, and PSDL, which focuses on public services. The first notion is that the repeated use of services can be seen as a failure in the public sector but is one of the core aims in the private sector. Due to this difference, the private and public sectors have different aims for value creation. Second, the public sector has a segment that is unfamiliar to the private sector of customers who are not using the services of their own will (e.g., child protection). Due to this different role, voluntary agency in value creation is not straightforward. Third, public sector services can have multiple end-users who have different ideas of the successful outcome of a service. Fourth, the users of public sector services can receive different services, and the value creation is dependent upon many stakeholders. The final notion is that the dual role of being the users of public services and citizens who have a societal interest in public services is different than in the private sector.

In addition, Fox et al. (2020) have identified several reasons why public services cannot replicate practices from the private sector. In addition to the notion by Osborne (2018), they see that public service users, especially vulnerable groups, have become accustomed to a passive role, and the new role that co-creation requires could be overwhelming. They may not have capabilities, and they may need support or mentoring. For these reasons, co-creation in public services requires new thinking about how users are viewed. Osborne (2018) has revised this approach to PSDL and proposed a shift to a term that emphasizes the unique characteristics of public sector services: PSL. PSL argues that public service users create value through their interaction with public services and PSOs co-produce this. In PSL, the logic is that the PSOs need to be added to the equation as co-creators and not the service users. Value is created only when users use the public service offering and when it interacts with the user’s life experiences. These insights change the way public services are understood and conceptualized. PSL has its roots in SDL but also in the work done by Grönroos (e.g., Grönroos, 1982, 2011, 2019; Grönroos & Voima, 2013), where the idea is that “value can only ever be created by the service users.” Osborne (2018)
sees that this idea shifts the focus from looking at the performance of public sector organizations to the value as a key metric to evaluate public services. He also adds that, at the moment, public management theory is shifting toward dynamic value co-creation and replacing the co-producing perspective.

However, the definition of value and how it should be understood in public services has raised debates (e.g., Eriksson et al., 2020; Kinder & Stenvall, 2023). Cluley and Radnor (2021) studied value co-creation in a service redesign program in social and healthcare. In their study, they found that the definition of value should be understood much more broadly than it had been outlined before. The concept of value has been defined in multiple ways, and they see that a problem of definition emerges from the subjective, contextual, and temporal concepts of value. This means that value can mean different things to people in different time periods and contexts. Their framework differs from previous ones by understanding the co-creation process as fluid and heterogeneous. They see that co-creation should not be defined simply as an interaction between public service providers and users/customers. The value of public services is, in their view, a diverse phenomenon that is different for different people, and it will change over time. In addition, the factors that are involved in the value creation process are heterogeneous (e.g., human, technological, social, cultural, economic, or environmental), wide-ranging, and temporal. The process of value co-creation should also be seen as a continuous process rather than an outcome or interaction. In reality, they see that value co-creation does not necessarily need the involvement of service users, or the users may appear and exit the process in different phases. The key, in their view, is to see the variety of mixed elements that are always present and experienced differently. Prioritizing one element, for example, users, is not a suitable model for PSOs.

Trischler and Trischler (2022) have approached value creation from a multi-actor point of view. They propose a “design for experience” as a conceptual framework that aims to facilitate value in users’ life worlds. They also utilize the service ecosystem concept to help promote public service design, as the concept recognizes that the user’s value creation process is embedded within a multi-actor configuration and governed by institutions. Kinder and Stenvall (2023) have also focused on value and questioned the PSL logic on the issue of how and by whom value is created. They have argued that PSL is an unconvincing research framework since it sees that public value is produced only by the users. They see that categorizing public service professionals as nonvalue producers weakens the justification of having a public
sector. Sønderskov and Rønning (2021) have also taken an interest in the matter of public value. They see that, while PSL originates from the service management tradition, it focuses too much on individual needs. The focus should be instead on how to produce public value through public services. Public value has different dimensions that may not be aligned with private value creation. Problems arise when the public sector tries to manage these conflicting values at the same time. Sønderskov and Rønning (2021) argue that citizens should not be seen as individuals but as public customers and their needs should be placed in a context.

In addition, Go Jefferies et al. (2019) state that the need for institutional change to foster social innovation implies that governance issues are the motivation for user participation. They see that this undermines the importance of the value created in everyday service interaction. When taking this as a starting point, value co-creation highlights the value determined by the beneficiary. In this, value co-creation refers to service users’ efforts to realize the value in their own lives and life experiences, not the formal opportunities set by provider organizations. They also see that experimental value co-creation by individuals can create the basis for changes at the system level. Service innovations always mean that service users alter the provider-led value proposition through their experiences. In other words, they use their resources to alter the service and make it fit for their purposes.

In public services, social and healthcare provides an interesting field for studying co-production and co-creation. The services are intangible in nature, and there is a growing need to answer the rising costs and demands of citizens. There is also an interest in empowering citizens to be active participants in care processes. The following section will present how co-production and co-creation have been studied in the social and healthcare contexts.

2.3.4 Co-production and co-creation in social and healthcare

While NPG changed the policy focus in healthcare from patients to customers and introduced narratives of patient-centered and personalized care, it has not achieved the results that were expected (McMullin & Needham, 2018). Models of service delivery in social and healthcare are evolving toward prevention and new forms of partnerships that are based around the concepts of co-production and co-creation. Personalization of service is one approach gaining momentum in Europe, and it has the potential for service user empowerment (Fleming & Osborne, 2019). For
example, Meriluoto (2018) notes that Finland has adopted a participatory emphasis in public governance in the 21st century. This was due to the legitimacy crisis of the state and to meeting the rising costs of public services.

McMullin and Needham (2018, p. 151) have defined co-production in healthcare as “the direct contribution of patients, service users and/or family members to the health or wellbeing service from which they (or their family members) benefit.” They see that co-production is an inclusive approach that can enhance healthcare service to meet the acute challenges of the aging population, shrinking public finance, and increased demands for personalized services. Co-production is a required element in healthcare where medical professionals and users co-produce the service. Williams et al. (2016) point out that, because of this, co-production and co-creation in healthcare have received much attention in public service research.

Fleming and Osborne (2019) suggest that co-production and how it is managed are key factors in the success of social policy reforms pursuing personalization in adult care. There are a few examples of reforms that have followed the ideas of NPM, co-production, and co-creation. Nederhand and van Meerkerk (2017, 2018) presented their findings on the welfare reform implemented in 2015 in the Netherlands. The aim was to utilize society’s resources more broadly and shift back responsibilities from the government toward society. This was due to the growth and changes in demand, which challenged the welfare system’s finance and quality. The government had raised concerns about the sustainability of the welfare system and created a “change necessity” frame for reasoning the needed change. Nederhand and van Meerkerk (2017, 2018) noted that the reform focused strong attention on citizens as co-producers and placed citizens as partners in the delivery of services. Their findings provided empirical evidence that co-production and co-creation in the social and healthcare sector is becoming an increasingly important theme.

McMullin and Needham (2018) have studied co-production reform programs in healthcare. They note that the individual involvement of users is important and can be seen to empower people to self-manage their health. In addition, effective co-production requires that the user’s expertise and experience be more valued and the relationship between users and professionals be put on an equal footing. However, this requires a cultural shift, which is not easy in a highly professionalized sector. The professionals may fear that the co-production initiatives could undermine or undervalue their expertise. In many cases, the obstacle may be that they do not have
the necessary skills for co-production. Finally, they point out that users may have knowledge that does not conform to the evidence threshold respected in the medical field and thus not motivate the professionals to acknowledge the users’ own knowledge.

McMullin and Needham (2018) further highlight the importance of motivation to co-production in healthcare, where, at the same time, there are endless possibilities but also barriers and challenges that do not exist in other sectors. There are situations where the co-delivery of services is impossible, such as emergency situations or surgery. Nonetheless, they note that citizens can be involved in deciding elements that constitute the service, for example, shaping the prioritization of forms of surgery. Citizens can be involved in the direct delivery of services or in planning the core service and complementary tasks. Park (2020) notes that social and healthcare service users have traditionally had a limited opportunity to influence the services they use. McMullin and Needham (2018) see that inequalities can act as a barrier to co-production but can also be seen to create pressure to become involved to “pay back” the help provided by the health system. Health problems can also act as motivators for citizens to participate but, at the same time, diminish their capacity to be involved. Long-term health conditions, such as diabetes, can encourage citizens to be involved in co-production activities and act as “expert patients,” for example. Park (2020) sees that, even though the advantages of using customers’ experience and knowledge are recognized in the field of social and healthcare, clinical or organizational practices are still prevalent. Furthermore, the emphasis on efficiency has depressed activities that do not add measurable economic value.

Park (2020) has conceptualized co-production through the lens of patient-centered care. He uses models that highlight the differences in user–provider relationships in services. These models are provider-driven service production, user-driven co-production, and user–provider co-production. In provider-driven service production, social and healthcare professionals are seen as decision-making authorities, and the customer’s job is to comply with the provider’s decisions. As passive service recipients, customers have little influence over the services they receive. The effectiveness of the service is questionable because, even though the professionals know the nature and consequences of the treatment, they cannot control the actions of the customers or their experience of the outcome. Technical quality might be ensured in this model, but it often fails to satisfy customers or meet their needs. In user-driven coproduction, the customer holds the major decision-
making authority. In addition, customers are encouraged or required to participate in the care decision-making process and to contribute to service delivery by using their own expertise and resources. The problem is that this might be an overwhelming process for vulnerable customer groups. User–provider co-production has been seen to combine well-working elements from provider-driven service production and user-driven co-production. In this model, professionals facilitate their customers’ decision-making processes by providing information. The model recognizes that professionals and customers have different kinds of knowledge, and it should be combined in service production. There is a mutual dependency, and there should be collaborative interaction in the service production. The model’s disadvantage is that the process is time- and resource-intensive for professionals and customers. Professionals may also have difficulties sharing power with customers.

Additionally, a study by Go Jefferies et al. (2019) highlight the importance of acknowledging the different types of customers and their capabilities to co-create services in social and healthcare. They must use and integrate different types of knowledge to utilize the provided services. Because the starting points and personal capabilities differ, it would be beneficial for the service provider to acknowledge the differences and use this knowledge to offer services that are more targeted toward the customers’ needs. To provide the targeted services, the system needs to identify the differences, capabilities, and skills of different customers. To utilize the resources and acknowledge the different types of value created in the service, the service provider has a better chance of creating effective services. They also add that this also makes it possible to reduce the costs of services by focusing on the needs of different customers.

ICT can create new possibilities for identifying customer needs and better utilizing the information available. Technological advances and cultural changes have made the implementation of co-production and co-creation much easier (Brandsen et al., 2018a, 2018b). New technology provides the potential to help share, access, and use up-to-date and accurate social and healthcare information wherever needed and provides users the possibility to act as active care partners (Brandsen et al., 2018a, 2018b; Shah et al., 2019). It can give control over access to health resources, allow citizens to move away from the patient role, and provide possibilities to take care of themselves (Go Jefferies et al., 2019). This creates opportunities to gain a more complete picture of individuals’ health and to support decision-making and dialogue
between people and care providers. In a recent study, Go Jefferies et al. (2019) found that new technology, such as telehealth, had a game-changing nature, as it gives customers a chance to co-create the service even if they have not been formally invited to co-create anything. This also provides opportunities for customer groups, who have usually been seen as passive recipients of services, to engage in co-creation or co-production.

The new information provides opportunities to better plan social and healthcare services. However, Shah et al. (2019) note that the potential is underused due to the complex nature of social and healthcare services, where sensitive information creates barriers. At the moment, they see that social and healthcare data are (in the UK) scattered in silos and are stored under a mixed use of paper and electronic records. When considering sharing this information beyond social and healthcare organizations, the situation becomes even more difficult. Shah et al. (2019) also note that the current policy and financial incentives also encourage the acquisition of off-the-self solutions instead of open standards, inter-operable and value-based solutions. However, the complexities and sensitive nature of social and healthcare service information require a more customized approach to develop new solutions. Brandsen et al. (2018a) also note that, even though the time is right for co-creation and the technological tools have created new opportunities for interaction, the change is slow, and the extent of citizen involvement still differs between types of services, organizations, and cultural contexts. Citizens may also have unrealistic expectations of what is possible to achieve, and professionals may have difficulties adjusting to new types of service delivery.

2.4 Facilitators and barriers to co-production and co-creation

As discussed earlier, NPG and co-creation have been seen to provide means to transform public social and healthcare systems to answer the current grand challenges. The discussion has centered on the possibilities they offer, but the paradigms of PA and NPM are still strong. Therefore, it is important to discuss and study whether co-creation can transform public social and healthcare services. Transitions are never easy, and there are multiple challenges and obstacles. In this section, the facilitators and barriers to change are discussed. The focus is also on the required systemic changes.
2.4.1 Benefits and facilitators of co-production and co-creation

Co-production and co-creation have been seen to better answer the persistent problems in our society, and there are benefits identified in the literature (e.g., Jaspers & Steen, 2019). Williams et al. (2016) have presented the positive impacts that scholars have noted as the benefits of co-production. These are cost savings, increased service quality, citizen participation, expanded user choices, enhancement of legitimacy, mobilization of resources, and improvements in efficiency. In addition, citizen empowerment (Fleming & Osborne, 2019), efficient, effective, and democratic services (Brandsen et al., 2018a, 2018b), and mutual learning (Fox et al., 2020) have been noted by other scholars as benefits of co-creation and co-production. In their literature review, Vanleene et al. (2015) and Jaspers and Steen (2019) identified the benefits and risks of co-production. The benefits were related to 1) better services, 2) better relationships between citizens/customers and the professional organization, and 3) better democratic quality. Better service aspects were divided into cost-effectiveness, effectiveness, quality, satisfaction, and performance. Concerning the better relationships between citizens/customers and the professional organization, learning, trust, and being considerate of citizens’ needs were seen to be important factors. Finally, better democratic quality included democracy, empowerment, fairness, equity, and social capital as factors. However, these are only examples of the effects and outcomes that are seen as potential. Different scholars have studied this issue from different perspectives, which are discussed next.

Torfing et al. (2019) approached this issue from the viewpoint of drivers of co-production and co-creation. They see that politicians want to strengthen their political leadership and acknowledge that they need other actors to carry out their goals. Nonetheless, public managers and employees acknowledge that they do not have all the ideas, means, and resources to solve the current wicked problems, and the citizens, on the contrary, seek community and purpose and want to be actively involved in making decisions that affect their lives (see also Crosby et al., 2019). Overall, Torfing et al. (2019) see the positive sides that co-creation enhances democratic participation and the legitimacy of the public sector and that it fosters more efficient and effective solutions, strengthens social cohesion, and builds more resilient communities.
van Eijk and Cascó (2018) studied the motivation behind co-production and co-creation, and they add that citizens are motivated to participate in co-production with a complex mix of incentives. It is not just to maximize benefits, but they also find co-production interesting and enjoyable. However, they also see that it is very difficult to develop a theory that explains the engagement of all co-producers. This is because different groups of co-producers are differently motivated. The context of a specific co-production process has a substantial effect on co-producers’ motivation.

However, in their systematic literature review, Voorberg et al. (2015) note that concerning co-creation and co-production in public innovation, in many cases there are no specific objectives mentioned of why it is important to co-create or co-produce something. Co-creation and co-production are seen as values in themselves, and the objective can be to increase citizen involvement. Other objectives that were mentioned were effective services, gaining more efficiency, and creating more customer satisfaction. They also noted that there was only a little attention paid to the outcomes of co-creation and co-production. They noted that, if a concrete outcome was reported, it was referred to as an increase in effectiveness. Others were the increase in citizen involvement, gaining more efficiency, gaining customer satisfaction, strengthening social cohesion, and democratizing public services. However, these outcomes were reported in only a few publications. Voorberg et al. (2015) note that there is a need to separate the process of co-creation from the outcomes. At the moment, research results have not focused on the outcomes and therefore do not clearly show whether co-creation and co-production really address the needs of citizens and thus make a change in society.

As democracy is one of the positive effects of co-production and co-creation, Verschuere et al. (2018) have studied this issue more thoroughly. It is presumed that co-production and co-creation have a connection to democracy and that participation will lead to equal opportunities and access to services and thus better democratic quality. However, Verschuere et al. (2018) question whether co-production and co-creation projects reach all citizens, whether everyone has the possibility to participate, and whether the benefits are fairly distributed. What is interesting in their study is that they studied the concept of democratic quality from the viewpoints of equity, inclusion, or exclusion and impact and empowerment. Co-production should include all the actors that are affected to co-produce the service. These concepts alone have also been identified as positive effects of co-creation and
co-production. This notion brings up the issue of how to justify the need to co-create or co-produce, what the expected outcomes are, and how they are planned to be reached.

2.4.2 Barriers and the dark side of co-creation and co-production

At the same time, as the benefits of co-creation and co-production are used as a justification to renew public services, there are also barriers to co-creating and co-producing services. Authors in public service research have identified a number of factors that explain why co-production has failed in some reforms aiming to introduce new co-produced services. Some commonly mentioned barriers are that co-creation and co-production can be biased toward citizens with time and energy to participate in joint decision-making (Torfing et al., 2019; Vanleene et al., 2015). Osborne and Strokosch (2013) also found that public service providers can see co-production as time-consuming, resource-intensive, and something that diverts time from “real” tasks. There are concerns that more participants can make the process fuzzy and lead to problems in finding consensus. A similar notion is made by Fleming and Osborne (2019), who note that professionals also need more time and resources to facilitate an open decision-making process.

However, it was interesting that Fleming and Osborne (2019) also highlighted the problem of a lack of sustainable funding from the government. In the program that they studied, they discovered that, once the program was over, it was unclear how the projects would be funded. Furthermore, the professionals knew this, and it reduced their commitment and engagement. They also questioned whether co-production would be just a trend that would change to something else in the future. This discontinuity will lead to limited impact, which is also noted in the study by Vanleene et al. (2015). Fleming and Osborne (2019) pointed out that local authorities questioned putting resources into something that was not proven to be effective. At the same time, outcome reporting did not capture the actual co-production impact. At present, quantitative and population-level data do not work for this purpose, and qualitative forms of impact assessment are difficult to evaluate at the policy level.

This relates to the wider issue of innovation in the public sector and the fact that innovations can also fail when developing public sector services. Hartley (2005) has identified different reasons behind the failure of innovations in the public sector. Politicians may be cautious about supporting an innovation because they carry the
responsibility for unsuccessful innovations. In addition, the media is eager to highlight failures in the public sector, making other actors cautious. It would also be important to notice when to “cut losses” when an innovation fails. However, in the public sector, innovation processes are not usually formally ended but are instead overlaid with new initiatives.

The risks are understood almost wholly as a negative concept, and ideas have been concentrated on risk minimization, thus minimizing innovation rather than risk governance (Crosby et al., 2019; Osborne et al., 2020). In addition, de Vries et al. (2015) have observed that this also implies in research where many studies focus only on the positive effects of innovation and only a few have reported failures. Osborne et al. (2020) have studied risk and how it is understood in public sector innovation processes. They see that innovations are demanded by governments to produce more efficient and effective public services. The limitation of understanding risks endangers the implementation and the potential benefits of innovations. Osborne et al. (2020) note that risk should be understood in the public sector as an essential component of innovation, and a lack of understanding undermines public policy initiatives. This understanding should be acknowledged by public sector managers, professionals, and public sector funders and regulators. In addition, stakeholders should be engaged in transparent processes where the types and levels of risks are discussed and agreed upon. Hartley (2005) and Osborne et al. (2020) highlight the importance of learning from risks and failures in innovation processes. The public sector should learn much more about the success of innovations but also why they fail. Recognizing failures may help understand better the innovation process and the barriers and facilitators of innovation.

In a recent study, Fleming and Osborne (2019) noted that professionals did not differentiate co-production from asking service users for their opinions. They also found that in order to facilitate cultural change and to change current practices, a leap of faith was seen as important among the professionals. Torfing et al. (2019) highlight that a mental shift is required in order for the co-creation of public services to happen. They note in their study that developing a role that is suitable for co-creation activities is not easy for the public and private actors. Roles and identities are difficult to transform. This also applies to politicians who have problems sharing power with other actors, public managers who are terrified by the thought of collaborating with other organizations and sectors that they cannot control, and public employees who are used to identifying themselves as expert care providers.
and not enablers. In addition, citizens can see themselves as taxpayers with the right to receive the services they want, and private organizations can see each other as just competitors.

Osborne and Strokosch (2013) have also identified broader limitations to co-production. First, co-production should not be seen as a way to replace professionals with service users but to bring these different forms of expertise together. The complexity of public services challenges co-production, but it should not be seen as a reason to limit the role of co-production. Finally, empowerment, participation, and user-led innovation are based on trust. Professionals need to trust that they will receive returns from co-production, and service users need to trust that their contribution is valued.

In addition to identified barriers to co-creating public services, the “dark side” of co-production and co-creation has recently gained interest (e.g., Steen et al., 2018; Williams et al., 2016). Williams et al. (2016) point out that there are studies that have noted the costs of co-production and co-creation, such as conflicting values, risk aversion, shortage of capacity, and incentives, but they have not focused on the negative impacts on public value. However, one problem has been with defining what the public value is. Even though the definition of public value is controversial, co-production and co-creation have been claimed to improve these values. Williams et al. (2016) have pointed out that, when there is a possibility for value co-creation in the interaction between producers and citizens, there is also a chance of value co-destruction. They have called this process in the context of public service value co-contamination. Value co-contamination is the result of misused resources during the interaction of producers and service users.

Steen et al. (2018) have identified seven evils of co-creation and co-production, as they see that the literature in these research areas in public services has been mostly optimistic concerning the presumed effects. They see that co-production and co-creation have been seen to hold positive value unto themselves, even though the increased efficiency and effectiveness have not been proven sufficiently. They point out that, if the research is biased, it will lose its credibility and mislead professionals and policymakers. However, they note that research into failures can help learn how to avoid pitfalls. They also add that co-production and co-creation require substantial investment of resources and openness from the actors involved.
Deliberate rejection of responsibility is the first pitfall identified by Steen et al. (2018). User engagement can be seen as government actions to enhance cooperation with public services and citizens. However, it can also be seen as a means for governments to minimize their responsibilities due to financial pressure. The second pitfall, failing accountability, is related to the new distribution of power. As governments aim to shed responsibility to citizens, private organizations, and voluntary groups through co-production and co-creation, the responsibilities of the different actors and accountability for the quality of services can be blurred. There is a need to clearly outline the roles of different actors. This issue becomes important, especially in situations where the service is co-produced, but it fails to meet its goals. The third pitfall comes from the cost of involving citizens in creating and implementing services. Rising transaction costs from meetings and consultations with different actors can only be covered by significant service improvements. Co-producing and co-creating services are seen in public management studies to increase democracy in society. However, according to Steen et al. (2018), loss of democracy is the fourth pitfall. They note that studies have not been able to prove that the co-production of services will lead to an increase in democracy and can, in turn, prevent actors from taking a critical stance. In addition, co-production and co-creation can lead to reinforced inequalities, even though they have been seen to act in the opposite way. The new power positioning has been seen to make co-producers equal partners, but it fails to see the differences in terms of formal position, knowledge, expertise, resources, or abilities. In reality, governmental actors may gain more power, while wealthy and highly educated citizens may dominate the process, and vulnerable citizens may feel that they are incapable of engaging in co-production. This will increase inequalities if the different capabilities are not taken into account. Despite better-off citizens having the capabilities to co-produce services, it might be that less well-off citizens have pressure to participate in order to claim service provision and a quality of services that are targeted to their needs. This comes from the idea of “paying back” the help they receive. These implicit demands are a concern as they shift the focus to individual responsibility. Finally, Steen et al. (2018) note the co-destruction of public value that was highlighted in Williams et al. (2016). They see that value can be either produced or destroyed in co-production and co-creation processes.
2.5 Systemic changes in the public sector to promote co-production and co-creation

Torfing et al. (2019) noted that the goal in solving problems of our time, which are complex and multilayered, is to co-create solutions together with other actors who have the knowledge, resources, and concepts to foster new disruptive ideas and realize them in practice. The ideas of co-production and co-creation have been implemented in different countries and different levels of government. They see that NPG has the power to transform the public sector by replacing public sector monopolies used in PA and public–private competition that were brought about by NPM with multi-actor collaboration and co-creating and producing services. However, they have also noted that Scandinavian countries have started to develop new ways of co-creating public services, but they still struggle to realize the full potential of co-creation. Additionally, Sicilia et al. (2019) see that, even though co-production has gained a lot of interest, public sector officials do not have a complete understanding of co-production. Realizing co-production and co-creation is difficult, especially if the idea is to create innovations that aim to change the system structure (Go Jefferies et al., 2019). McMullin and Needham (2018) highlight that, to successfully co-produce healthcare services, changes at the individual and system levels are needed. Some barriers are discussed earlier, but there are also successions of systemic changes that are needed for co-creation and co-production to meet expectations.

The following section will discuss the required systemic changes suggested in the literature to promote the change toward the use of co-production and co-creation (Table 3). These topics are the changes in professional culture, roles, and leadership, creating opportunities for co-production and co-creation, developing new tools for evaluating public services and scaling up innovations, and enhancing the use of technological tools. However, it should be noted that these topics are more or less connected to each other and are, in many cases, systemic by nature. Table 3 presents concrete changes within these topics, which are then discussed in more detail in the following sections.
Table 3. Overview of the systemic and concrete changes toward transition on co-production and co-creation

<table>
<thead>
<tr>
<th>Systemic change</th>
<th>Concrete changes</th>
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<tr>
<td>Changes in professional culture, roles, and leadership</td>
<td>Clarify the roles of professionals</td>
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<td></td>
<td>Create new positions</td>
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<td></td>
<td>Dedicated funding to co-produce and co-create</td>
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<td></td>
<td>New modes of working for organizations and professionals</td>
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<td></td>
<td>Transforming public sector professional culture</td>
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<td>New type of leadership</td>
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<td></td>
<td>Creating new competencies</td>
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<td></td>
<td>Providing training and communication for professionals</td>
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<td>Creating opportunities for co-production and co-creation</td>
<td>Understanding what co-production means</td>
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<td></td>
<td>Understanding who the co-producers are</td>
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<td>Understanding what their expectations are</td>
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<td>Understanding how customers co-create value</td>
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<td>Learning from the experiences of all users</td>
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<td>Attracting different customers</td>
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<td>Enhancing empowerment</td>
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<td>Information and resources</td>
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<td>Professional support</td>
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<td>Relationship between existing regulation and co-production and co-creation</td>
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<tr>
<td>Developing new tools to evaluate public services and scaling up innovations</td>
<td>Impacts of the project need to be proven</td>
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<td>System-wide evaluation</td>
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<td>Trust-based steering system</td>
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<td>More focus on long-term effectiveness</td>
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<td></td>
<td>Scaling up co-created innovations</td>
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<tr>
<td>Enhance the use of technological tools</td>
<td>More understanding of the nature of co-production and its interaction with emerging technologies</td>
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2.5.1 Changes in professional culture, roles, and leadership

Professionals play an important role in promoting co-production and co-creation in public services. However, many changes are needed in the way public services are understood and organized. Fox et al. (2020) have identified issues that need to change to implement co-creation. First, the role of professionals and organizational structure needs transformation. Sicilia et al. (2019) have noted that managers should use tools that make the importance of using co-production visible to professionals and clarify their role in it. They also see that developing organizational structures can mean, for example, that public managers should develop organizational arrangements, such as new positions that support the use of co-production. Creating new positions and giving time to the process does not happen without extra funding resources. That is why Fleming and Osborne (2019) see dedicated funding as one of the most crucial success factors in promoting the use of co-production and co-creation. McMullin and Needham (2018) have pointed out the motivational aspect of co-production from a professional point of view. The quality of care, service efficiency, and maintaining/increasing competitive edge were seen as examples of why professionals and hospitals were taking part in co-production activities.

The second issue in Fox et al.’s (2020) study is that supporting individuals in developing their capabilities requires new modes of working for organizations and professionals. Professionals must consider their purpose and how they see service users. In particular, professionals who exhibit a high level of technical and procedural knowledge have a hard time moving toward co-created ways of working. However, it needs to be acknowledged that the professionals are struggling with top-down, bottom-up, and horizontal requirements with competencies that they have learned from the previous paradigm.

Additionally, Torfing et al. (2019) see that changes are needed that relate to transforming the public sector professional culture from being guardians of the truth and best knowledge into a culture that values dialogue, curiosity, and openness.
Transforming the culture is not easy and requires systemic change. Schlappa and Imani (2018) have combined this issue with the question of new types of leadership, which is also noted in the work by Williams et al. (2016). Schlappa and Imani (2018) argue that leading co-production should be seen as an interdependent process where a new type of leadership is needed. It is not a top-down controlled or solely bottom-up process in which citizens take control. However, there are challenges to constructing and utilizing this perspective of leadership. Through the process of co-production, the actors depend on each other. In many cases, they have different and even conflicting motivations and expectations. In addition, citizens are not bound by organizational control. The absence of traditional approaches to leadership may give rise to power struggles and conflicts. This challenges the traditional assumptions in professional work, where control, accountability, and standards are emphasized.

The new competencies that are required from professionals have been studied by Tuurnas (2015) and Steen and Tuurnas (2018). These studies show that the competencies required from professionals are the ability to facilitate and mobilize others instead of technical skills or substantive knowledge of the subject at hand. Professionals must learn how to motivate citizens to plan, design, and deliver services. They also need to coordinate actions, support collaboration, and make sure that the value produced is attained not only by the individual co-producers. In other words, professionals need to ensure that co-production and co-creation also create public value. These kinds of tasks may be completely new for professionals. However, Steen and Tuurnas (2018) have also paid attention to the issue that there is little empirical evidence on what motivates professionals to co-produce services. Professionals are embedded in the institutional structures of their organizations, which may support or hinder co-production. They also note that managers in public services have an important role as capacity-builders. They can create arenas for interaction and support professionals in co-production processes. What is needed from organizations that decide to focus on citizen participation is to develop their organizational culture toward openness, and they need to demonstrate commitment in order to encourage professionals to include citizens as partners.

For professionals to develop their capabilities and knowledge, training is needed. Fleming and Osborne (2019) have highlighted the need for training and communication for professionals to understand the true meaning of co-production. Additionally, Brandsen et al. (2018a, 2018b) have noted that professionals may need new skills and attitudes toward co-creation with citizens. The systematic literature
review by Sicilia et al. (2019) showed that organizations and managers should promote engagement with multiple stakeholders and create opportunities for professionals to learn and develop skills and knowledge. However, Fox et al. (2020) have noted that acquiring new skills may also require unlearning previous practices and discarding previous assumptions of how value is created. This is a fundamental change for many professionals.

2.5.2 Creating opportunities for co-production and co-creation

Co-producing and co-creating public services are demanding and new for citizens. Fleming and Osborne (2019) suggest that policymakers and those involved in implementation should make clear what kind of engagement with the service users is sought, as the forms of engagement differ according to type. It should also be made clear what co-production means and communicate this transparently. In addition to understanding what co-production and co-creation mean, it is also important for professionals to know who the co-producers are, what their expectations are, and what motivates them to engage in service production to meet their demands and expectations (van Eijk & Cascó, 2018). Fox et al. (2020) propose that public sector services need to be developed through asset- or strength-based approaches that identify people’s resources and their potential for developing new personal assets. Go Jefferies et al. (2019) have approached this issue from the point of view of how customers co-create value in their everyday activities outside formal participation. They also add that the active role that the users play requires the use of their physical, mental, emotional, social, and cultural resources. These requirements need to be understood and met when designing and performing services. They have also made the important notion that instead of just looking for deeper user and expert engagement in the service design process, the focus should also be on learning from the experiences of all users. Their study showed that the co-creation of telehealth services involved users developing and combining different types of knowledge from their health and life experiences and required the adaptive use of the service system. Sicilia et al. (2019) also drew on management implications related to procedural factors of co-creation. Participation recruitment needs to attract different customers to avoid selection bias. Fleming and Osborne (2019) have also highlighted the need to include a wide variety of stakeholders.
The WHO (1997) defines empowerment as a process through which citizens gain greater control over the decisions and actions affecting their health and well-being. Osborne and Strokosch (2013) have studied empowerment and see that user participation and empowerment overlap, but they have some main differences. User participation is concerned with the role of service users in the service planning process, and empowerment involves the ability of service users to control their experience of public services and also to contribute to the outcomes. Additionally, the customization of services is another feature that has been discussed, but Osborne and Strokosch (2013) argue that this only improves the operational fit of the service to individual needs but does not transform the service overall. Jo and Nabatchi (2018) reviewed studies on empowerment effects in co-production and co-creation. They noted that empowerment is widely used in different disciplines and has no clear definition. They also made a similar observation to Lember (2018) that, even though empowerment is seen to be one of the major positive impacts of co-production and co-creation, it is not measured, and the process leads to other outcomes. Jo and Nabatchi (2018) have introduced a theory that has three levels: individual co-production, group co-production, and collective co-production. Each of these types of co-production generates different empowerment effects for the participants. They have also used Zimmerman’s (2000) theory, which considers empowerment as a process and as an outcome. They also see that, when viewing co-production from the perspective of empowering processes and empowered outcomes, it is clear that co-production can create benefits for individuals, groups, and communities. Through co-production, actors can participate in the design, delivery, and assessment of public services.

Information and resources for co-production should be given to the participants on a regular basis, and public managers should ensure active participation through different forms of engagement and by using ICT and social media tools. However, this raises the issue of the different capabilities of citizens to participate in co-production and co-creation. Verschuere et al. (2018) highlight the importance of professional support, which is essential, especially with groups that lack competencies allowing them to participate. Providing resources and tools is important, but just inviting participants is also necessary. They also note in their study that professionals have an important role in demonstrating the positive results of participating to citizens. However, they point out that professionals may disregard citizens’ input or select only the matters that suit their own needs, which could lead to worse effects than no participation at all.
Szescito (2018) has highlighted that little attention has been paid to the relationship between existing regulation and co-production and co-creation. However, it is a necessary element for the implementation and dissemination of co-production and co-creation of public services. Szescito’s (2018) study notes interestingly that regulation should not be seen only as a constraint but also as an enabler of public management. It provides the mandate to act and limits and sets boundaries for administrative actions at the same time. From the citizens’ point of view, participation in co-production or co-creation does not require any legal mandate. On the other hand, the participation of public agencies requires a legal basis to use public funds and assets. Szescito (2018) points out the relevant elements of the regulatory framework in co-production. The basic assumption is that the standards, availability, and quality of public services should be defined by regulation. Regulation needs to distinguish the general distribution of power and responsibilities in service delivery between producers and citizens. There should also be a clear mandate for using public funds and assets in co-production and co-creation. Brandsen et al. (2018a, 2018b) note that the legal framework and traditions concerning the participation of citizens vary in different countries and domains, and thus policy opportunities for co-production and co-creation are different. The expectations of co-production and co-creation should be handled with care. This is also the case with outcomes that should be evaluated through the dimensions of the chosen values. The advantages and different possibilities of participation should be noted from the beginning. As the groups differ, the co-production process should be designed to take into account different contexts.

2.5.3 New tools to evaluate public services and scaling up innovations

To promote the use of co-production and co-creation, and to motivate professionals and citizens to participate, the impacts need to be demonstrated. Fox et al. (2020) note that because the evaluation of co-created services is complex, it has not been studied sufficiently and requires attention. However, some studies have also focused on the issues of evaluating co-production and co-creation. Verschuere et al. (2018) note that it is important that the impacts of the project need to be proven to the actors. This means that people need to feel that participation is important, and it has effects. Additionally, evaluation needs to support organizations in their everyday activities and not just create an extra administrative burden (Fleming & Osborne, 2019). In addition, Fox et al. (2020) and Fleming and Osborne (2019) have noted
that, for an innovation to spread, it must most commonly be evaluated and have evidence of its impacts. The evaluation of co-created services needs to include all the parts of the service that are co-created. Thus, this means evaluating a set of services that have been combined. This highlights the importance of developing new forms of evaluation in a system-wide view when dealing with co-production.

Torfing et al. (2019) have studied the evaluation and impacts of co-production and co-creation from a systemic point of view. They have identified systemic changes that are required to utilize co-creation at its best. The first aspect is that the current system needs to change from top-down control of performance management to a trust-based steering system. Currently, measurements are directed toward the individual performance of agents, which should be based on learning-enhancing self-evaluations of the outcomes produced by networks they are a part of. The second change relates to the current focus on short-term efficiency, stable operations, and risk elimination. The use of co-creation requires more focus on long-term effectiveness, with the chance to experiment and the possibility to take risks, which is important when pursuing innovation.

There are identified changes that need to happen, which are not entirely linked to organizations, professionals, or citizens but require a larger change in how innovations are scaled up. Scaling up innovations is essential when the aim is to create public value (Hartley, 2005). This issue is related to the evaluation and impacts of co-production and co-creation, as scaling-up is easier if there are proven benefits of the new way of producing services. Systemic change cannot happen if the innovations remain local and do not spread. Fox et al. (2020) state that scaling up co-created innovations is problematic, as they cannot simply be transformed to another location. In their study, they refer to the scaling-up of social innovations, which are, in many cases, related to co-creation. For social innovation, the process follows a spiral path, where scaling-up and systemic change occur at the end. In reality, very few social innovations have been scaled up, and systemic change created through social innovation is very rare. It should also be noted that public sector innovators do not always realize how special their practices are (Hartley, 2005). In social and healthcare, the focus has also been on the short-term adoption of simple innovations, and there is a lack of studies concerning complex innovations.
2.5.4 Enhancing the use of technological tools

To meet the challenges in society, technology and digital technology have been seen to create new possibilities. Fox et al. (2020) see that it also contains the promise to reformulate co-production as it is currently understood. Osborne and Strokosch (2013) note that further understanding of the nature of co-production and its interaction with emerging technologies is needed to understand and govern the processes of public service delivery and renewal. Brandsen et al. (2018a) also highlight that new technological opportunities need to be used in the public sector.

Torfing et al. (2019) and Fox et al. (2020) argue that there is a change needed in the use of ICT as a tool to promote involving citizens in co-creating services. Their studies found that the engagement of citizens is currently still low, and new innovations are needed. Torfing et al. (2019) also note that ICT is currently mostly used to enhance administrative efficiency and communication, not to enhance collaboration with citizens. In addition, Fox et al. (2020) state that, in co-creating public services, the models on how to use technology have come from the business world, where the logic could be very different. There are also possible problems with accessibility and social inclusion that can emerge and that need attention.

Lember (2018) has studied how the use of ICT can change the way public services are organized and how citizens can contribute to them. In terms of co-production and co-creation, new technologies can indirectly affect things by transforming traditional modes of production or substituting old practices. Lember (2018) note that, despite a rapid change in technology, there is only limited information on the impact of citizen engagement in the public sector. The study points out that technology can give citizens more opportunities to contribute to the delivery of public services, and it has been seen as one of the central arguments for using digital solutions. However, there is also a lack of evidence on the impact of digital technologies on citizen empowerment. Finally, Lember (2018) also points out that, even though digital technologies have great potential for empowering citizens, as well as increasing the participation of citizens and increasing efficiency and effectiveness, the systemic impacts are yet to be seen. Digital technologies may have multiple opportunities to push the evolution of co-production and co-creation, but the direction is still open.
2.5.5 Toward systemic change in social and healthcare in Finland

What is central in the dissertation is the aim of studying whether co-creation has the possibility to change the social and healthcare system in Finland and whether transition studies can provide more understanding and different methods to support it. Theoretical discussion on the paradigmatic views of the public sector has provided an understanding of the changes that have happened in society and how public policymaking has tried to answer them. The complexity of society and the grand challenges have caused problems in producing public services that are sustainable and meet the expectations of the users. The paradigm of NPG has been seen to provide a means to renew public services. Furthermore, the framework of PSL offers a viewpoint of seeing the users of public services as the source of change and sees that public services should be developed from the users’ perspective to promote value co-creation.

Innovations are needed to create new co-created services that improve the quality of services and enhance the problem-solving capacity of governmental organizations (de Vries et al., 2015; Windrum, 2008). These innovations are embedded in society, and they aim to produce benefits for individuals and provide public goods and services (Hartley, 2005). Innovations in governance and public services are not, in many cases, physical artifacts but ambiguous changes in the relationship between service providers and customers. Theoretical discussion on public policymaking has shown how there is a need to promote systemic change to utilize co-creation in social and healthcare services in Finland. Systemic changes toward the use of co-created services in social and healthcare have been identified and presented in the previous sections. However, this dissertation aims to determine whether public policymaking can promote co-creation by using frameworks and methods from transition studies to support systemic changes. For this purpose, the dissertation next introduces the theoretical starting points from transition studies, which can be used to understand the dynamics of system change. The next chapter focuses on systemic innovations and change that can be studied and promoted by the use of MLP, TM, and SNM.
Transition approaches have attracted attention over the past decades (Elzen & Wieczorek, 2005; Loorbach & Rotmans, 2010) as a useful way to understand the needed changes in shifts in socio-technical systems (e.g., social and healthcare systems). Based on the previous chapter, it can be argued that there is a need for systemic changes in the Finnish social and healthcare system to co-create services. However, theories and frameworks to understand systemic changes and how they can be promoted in complex systems are not utilized in public policy research in a sufficient way. The next chapter aims to discuss how transition studies have evolved as a theoretical and conceptual framework to understand socio-technical change in systems. It also aims to show that the change toward co-created public services can be seen as a socio-technical change.

Transition to a new system can be defined as a long-term change in a system that serves a basic societal function such as energy supply and use, mobility, communication, food production and consumption, and healthcare (Elzen & Wieczorek, 2005). What distinguishes a transition from an incremental change is the coevolution of technical and societal change. According to Rotmans et al. (2001), there are sets of connected changes and developments in different domains that reinforce each other but take place in different settings, such as technology, the economy, institutions, behavior, and culture. Transition requires change processes in all, or at least a large part of, these dimensions. These systemic changes toward the use of co-creation have been identified in the previous chapter.

Multi-Level Perspective (MLP) aims to conceptualize the overall dynamics in socio-technical change (Geels, 2007, 2011) and thus provides a framework to understand the transition process. The transition process is not deterministic but is adaptive, is capable of learning, and anticipates new situations. Rotmans et al. (2001) also noted that transitions involve different development paths whose direction, scale, and speed government policy can influence but never control. Transition Management (TM) and Strategic Niche Management (SNM) are discussed in this chapter since
they provide a framework for policy initiatives to support change. In addition, future directions in transition studies are presented since they have point out what the role of transition studies can have in future policymaking. Before discussing MLP, TM, and SNM, this chapter begins with a brief introduction of the complexity that surrounds modern society. It continues by presenting how systemic innovations are understood in this dissertation and how learning is deeply engaged in systemic change.

3.1 Complex systems, systemic innovations, and learning

The previous chapter described the increasing complexity of society and the new ways that are required to operate in this environment. These requirements are one of the drivers of the introduction of NPG. Policymaking happens in complex interaction processes between a large number of independent actors (Klinj & Koppenjan, 2000; Torfing, 2005). Successful policymaking and service delivery require coping with complex environments. Klinj and Koppenjan (2000) have noted that complex systems are dynamic in nature, where system components and their relationships make it hard to predict the outcomes of their interaction. They see that complexity may come when the actors have different perspectives on the problem because they view the problem from different frames and interpret the information differently. These different perceptions make policy problems wicked. They also add that wicked problems are complex because of the many components and actors that have different perceptions of the problem and its solutions. In addition, Geuijen et al. (2019) have added that the wickedness of a problem comes from the absence of an institution, a structure, or a process in which the problem could be nominated for attention. Klinj and Koppenjan (2000) see that a joint frame of reference and a shared solution between actors are needed to overcome these difficulties. However, they point out that coordination of policy action is challenging, and these types of wicked problems are typical in social and healthcare, where values and actions are perceived differently.

The complexity described here demands that the innovations developed are systemic by nature. In his research, Kaivo-Oja (2011) states that systemic innovations can be either incremental or radical and disruptive, and they can change the rules of the game and create paradigmatic shifts. Besides grand challenges, systemic innovations can also be driven by EU and governmental regulation, client demand trends, or new
skills and capabilities. Midgley and Lindhult (2017) have identified four different ways of using the term systemic innovation in the previous literature:

The first definition refers to a coordinated innovation system. Innovations are systemic, and there is an innovation system giving rise to them, meaning that innovations are produced by an innovation system (e.g., Lundvall, 2007). The research focusing on innovation systems is comprehensive but is not the main focus of this dissertation. However, it is important to note that the discussion of innovation systems forms the background of the discussion of systemic innovations. The second definition refers to the development of policies on the local, regional, and national scales to create an environment to support synergistic and multiorganizational innovations. In this context, systemic means that innovations can be enabled and/or constrained by a policy system. For example, the technological innovation system (TIS) approach (e.g., Wieczorek & Hekkert, 2012) can be seen as a framework focusing on the structure and processes of the innovation system.

The third definition understands innovation as systemic when its purpose is to change the nature of society through major transitions, for example. The research has mostly focused on sustainability issues and the transition toward a sustainable society (e.g., Shove & Walker, 2010). The notion that systems are nested with each other makes this definition systemic: reviewing healthcare, it is seen as a part of a societal system that is linked to every other system in this world. Collaboration is needed across the boundaries of systems, nations, and organizations to change the institutions that govern healthcare. The fourth definition highlights the process of the systemic thinking of innovators. The previous definitions focus on the innovation system, which is systemic in various ways. The last definition differs from the previous one by concentrating on the design of methodological processes to support systemic thinking.

The fourth definition is the most recently introduced, but Midgley and Lindhult (2017) argue that it has the greatest potential to take the theory and practice of systemic innovations to a new level. Innovation is seen as a process that can be promoted through system modeling together with stakeholder dialogue methods. The meaning of these approaches is to enhance social learning and help stakeholders understand the system behind the consequences and possibilities of innovations. The idea has many similarities to the social embedding of innovation, which is presented
in Section 3.3.5. Midgley and Lindhult (2017) define this as an innovation process that is constructed using methodologies, methods, and techniques that support stakeholder thinking to be more systemic. Systems can be seen as a conceptual tool to make sense of the situations we are faced with. To support the operationalization of this definition, Midgley and Lindhult (2017) propose that stakeholders participating in the development of systemic innovation can be identified through stakeholder analyses. They observe that stakeholders are not only those currently affected by innovation but also those who might be affected in the future. This offers a theory and method to understand different aspects of innovation and encourage evaluating its values, futures, and impacts. In the participatory process, stakeholders become more aware of systemic innovations and their economic, social, and environmental effects.

The emphasis on learning in innovation processes has been brought to the fore by Lundvall and his colleagues (Lundvall, 2007; Lundvall et al., 2002), who stressed the importance of learning and interactive cooperation between stakeholders. This is also linked to the discussion of system imperfection (e.g., Edquist et al., 1998; van Mierlo et al., 2010), where learning can be blocked by system imperfections, such as infrastructure, institutional, interaction, and/or capability failures. To overcome these failures, instruments that focus on the system level are needed. Systemic instruments can concentrate on the management of interfaces, constructing and deconstructing the system, providing a platform for learning and experimenting, providing infrastructure for strategic intelligence, and stimulating demand articulation, as well as strategy and vision development. The elimination of system imperfections is closely linked to system innovation. For system innovation, a reorientation of practices and structures is needed. This is therefore linked to eliminating system imperfections as they involve changes in roles and the interrelationship between different actors. In short, van Mierlo et al. (2010) state that systemic instruments can contribute to system innovation by confronting identified system imperfections.

An interesting discussion is from van Mierlo et al. (2010) and Quist and Tukker (2013), who have conceptualized single- and double-loop learning (see also Nonaka & Takeuchi, 1995). They see that single-loop learning involves learning how to do the targeted thing better without changing the underlying perceptions and assumptions. Double-loop learning happens where the assumptions of the system need to change. Double-loop learning includes questioning and changing basic
certainties, goals, and values, which makes learning much more difficult. System innovation needs double-loop learning, which also requires the experience of a serious problem that needs to be resolved. Learning is also required when considering what the barriers to change are and who the essential stakeholders for the innovation process are.

3.2 Socio-technical change and a multilevel perspective

MLP was developed by Rip and Kemp (1998), Geels (2002), Geels and Kemp (2007), and Geels and Schot (2007). In their early work, Rip and Kemp (1998) focused on the nature and dynamics of technical change. They were interested in how technology is shaped by social, economic, and political forces and how these technologies and technological systems shape human relations and the societies in which we live. Understanding these phenomena was seen as important when finding solutions to climate change problems. They observed that technological change happens in a multilayered sociotechnical system. From the theory point of view, they saw that a combination of economics and sociology was important in explaining and understanding technological change.

Geels (2002) started his research with the questions of how technological transitions come about and what the patterns and mechanisms are in transition processes. In his view, technology itself has no power and does nothing without integration with human agency, social structures, and organizations. He uses Hughes’ (1987) metaphor of a “seamless web” where physical artifacts, organizations, natural resources, scientific elements, and legislative artifacts are combined to achieve functionalities. With this integration, technology can fulfill its functions. Going back to Rip and Kemp (1998), they analyze technology as a “configuration that works,” meaning the alignment between a set of elements that works and throughout this configuration fulfills a function. Societal functions are, on the other hand, fulfilled by sociotechnical configurations. In this understanding, a technological transition consists of a change from one sociotechnical configuration to another, which involves the substitution of technology and also changes to other elements. A sociotechnical system is defined by Geels (2002) as linkages between elements necessary to fulfill societal functions.
3.2.1 Multi-level framework

Geels (2002) has further developed the multi-level frameworks developed by Kemp (1994) and Rip and Kemp (1998), for example. Evolutionary economics brought the concepts of trajectories, regimes, niches, path dependencies, and routines to MLP, which are at the core of the approach (Geels, 2002, 2011). Adding the concept of socio-technical regimes, Geels (2002) explains why technological regimes produce incremental innovations and how the regime is guided by rules followed by the users, policymakers, firms, societal groups, etc. The problem behind the difficulty of structural change is lock-ins in the existing system. Lock-ins can be in various forms, such as investments in machines, infrastructures and competencies or shared beliefs, power relations, and political lobbying. In addition, citizens’ lifestyles and preferences may be adjusted to existing (technical) systems. These lock-ins create path dependencies that stabilize the current regime. A socio-technical system is thought to be relatively stable because of the linkages between different elements. The different levels in MLP help understand the complex dynamics of socio-technical change.

MLP is a middle-range theory, meaning that it integrates theory and empirical research that aims to conceptualize the overall dynamic patterns in socio-technical change (Geels, 2007, 2011). Most of the studies are historical in nature (e.g., Geels, 2002, 2006a, 2006b) because transitions usually occur slowly. By using historical cases, certain patterns and mechanisms have been possible to demonstrate. MLP has been developed in the context of environmental studies focusing on sustainability issues. In the context of social and healthcare services, MLP has been used by a few authors (e.g., Broerse & Grin, 2017). Even though each transition is unique, there are general patterns that can be characterized. Transition is seen as a nonlinear process that results from the interplay of development on three analytical levels: socio-technical landscape, socio-technical regime, and niches. Transition is defined as change from one socio-technical regime to another (Geels & Schot, 2007). MLP offers researchers a theoretical approach that addresses the multidimensional nature of transitions and the dynamics of structural change and goes beyond studies of single technologies. The three levels in MLP are not descriptions of reality but more about analytical and heuristic concepts to understand the different complex dynamics of a socio-technical system (Geels, 2011).
3.2.2 Socio-technical landscape, regime, and niches

The roots of MLP are based on an understanding of transitions and regime shifts. According to Geels and Kemp (2007), there are three inter-related dimensions that are important: 1) socio-technical systems that need to fulfill societal functions, 2) social groups that maintain and refine the elements of a socio-technical system, and 3) rules that guide and orient the activities of social groups. These elements co-structure each other. A regime refers to a semi-coherent set of rules that coordinate the actions of different social groups that reproduce the elements of the system (Geels, 2004). In MLP, rules are seen from the point of view of Giddens’ (1984) structuration theory, where rules do not just exist but occur only through use and reproduction in practice (Geels & Schot, 2007). The regime includes institutions, infrastructure, regulation, and organizational and social networks to structure and organize a particular societal function. The regime has different actors, such as users, policymakers, scientists, and public authorities, who are embedded in interdependent networks, and mutual dependencies create stability. These actors carry a set of rules that guide actions and perceptions. Such rules are, for example, shared beliefs, capabilities, competencies, user practices, institutional arrangements, and regulations. Regime rules have a more constraining influence than those in niches (Geels & Schot, 2007). Regime actors direct their action toward incremental change (Geels, 2006a; Raven & Verbong, 2007), and the regimes transform only when there is substantial pressure from outside (Geels, 2006a). In addition, the socio-technical system and its artifacts and material networks have a “hardness,” which in turn makes change difficult. These institutionalized practices and structures of the system are relatively stable in the socio-technical regime, which creates path dependencies and usually only incremental innovations and small adjustments.

Geels and Schot (2007) see that the socio-technical landscape consists of a set of deep structural trends that influence niche and regime dynamics and that cannot be changed by single actors. These include cultural and normative values, economic growth, and environmental problems. Changes that happen in the landscape create pressure for changes in the system. The socio-technical landscape has been used to describe the technical, physical, and material context of society. Although they note that the socio-technical landscape is relatively static, it also has dynamic aspects. Factors such as the climate do not change quickly, but the landscape also has factors that can have fast changes to society, such as wars. They also highlight that different
sets of elements form together the landscape, which is not possible for a single actor to influence.

While regimes tend to generate incremental innovations, radically new innovations are generated in niches that are protected from “normal” market selection. The functions of niches have been presented, for example, in Geels (2002, 2004) and Geels and Kemp (2007), where the niches are introduced as the seeds for change as they are incubation rooms for radical innovations. Innovations need protection because their cost efficiencies, technical performance, and usability that often need improvement. In MLP, niches refer to initiatives and activities in special application areas or bounded geographical areas. In this way, they provide locations for experiments and learning processes and space to build the social networks that support innovation. However, niche innovations do not always have a negative and competitive relationship with the existing regime. Geels (2006b) points out that niche innovations can also be symbiotic and can be adopted in the regime to solve certain small problems or fulfill additional functions.

Geels (2004) explains that, when the socio-technical regime is stable and aligned, niche innovations have only limited opportunities to break through and usually they remain stuck in a particular niche. Innovations break out from the niche level when the external circumstances are right, and innovative solutions challenge the current unsustainable socio-technical system. Such innovations may be based on pilots or experiments, new technologies, social innovations, or new services. This Geels (2004) calls the window of opportunity, which emerges when the practices and structures at the regime level are not compatible with the landscape. In transition research, niches are the engines of change. However, it has been noted that regimes and niche-regime combinations can also play an important role in transition (Geels & Schot, 2007). According to MLP, a crucial element in a systemic change is the interplay between processes in different system parts in different phases of development and dissemination of new innovative solutions. This stresses that technological systems change through the interplay between landscape, regime, and niche-level processes, which are presented in Figure 2.
3.2.3 Critique toward MLP

The ideas of socio-technical change and MLP have not evolved without scientific discussion and questioning of their foundation and usability. Geels and Schot (2007) and Geels (2011) have collected together the criticisms faced by MLP. The main criticism and development ideas have come from Berkhout et al. (2004), Genus and Coles (2008), Markard and Truffert (2008), Shove and Walker (2010), and Smith et al. (2005). The first criticism of MLP deals with the lack of concentration of agency in transitions (Genus & Coles, 2008; Smith et al., 2005). Some case studies show the role of agency in more detail, but Geels (2011) agrees that MLP might benefit from insights from other theories. In a more recent paper, Geels (2018b) has brought up some new directions that have enriched MLP. Theories addressing political
dimensions, the role of firms and organizations from the organization and business literature, and the roles of consumers and households are explored by using practice theory. Other new research directions are presented in Section 3.5.

The criticism of the operationalization of regimes in some form comes from Berkhout et al. (2004), Genus and Coles (2008), Markard and Truffert (2008), and Smith et al. (2005). They criticize the fact that MLP does not clearly show how the conceptual levels should be applied in empirical research. This means that defining the boundaries of the studies and analyses is important. In the case of social and healthcare, for example, a municipality can be viewed as a regime in some studies or as a place for niche innovation to develop. This could be viewed as a shortcoming or as a possibility to study transitions at different levels of society. Additionally, the concept of a regime requires more clarification and should not be viewed as too homogeneous. Geels (2011) responded that a regime is, on the one hand, a place where there are shared rules, but, on the other hand, it includes variety and disagreements.

Berkhout et al. (2004) also question whether bottom-up dynamics to transition are emphasized too much in MLP. Based on this criticism, Geels and Schot (2007) and Geels (2016) have formulated transition pathways where the ongoing processes at the regime and landscape levels are also taken into account. Geels (2011) also argues that MLP should be seen as an overall plot for studying transitions, and it helps us to see interesting patterns and mechanisms. For the methodological critique on the use of secondary data sources in historical cases (Genus & Coles, 2008), Geels notes that transition studies are aiming for more illustration of the phenomenon. For that reason, the methodological procedures always contain creative interpretations. The description of the landscape level has also faced criticism as a category for many different influences. For this critique, Geels (2011) points out the research made by van Driel and Schot (2005), where they divided the landscape dynamics into three different forms: factors that do not change or change very slowly (e.g., physical climate), rapid external shocks (e.g., wars), and long-term changes in a certain direction (e.g., demographical changes).

The literature on socio-technical change has focused on empirical studies of infrastructures and systems of provision. Shove and Walker (2010) have criticized MLP and TM as focusing too much on introducing new technology and the questions of supply rather than socio-elements of socio-technical change. They have
proposed focusing more on everyday life practices and using social practice theory, which they suggest will produce more effective interventions. Because the focus has been on technologies, the versatility of the stakeholders involved has been neglected. They also highlight the role of customers and practitioners in transition processes alongside producers. However, the question is not just about involving different stakeholders in the transition process but more about understanding how customers, users, and practitioners are involved in making and reproducing the system. Geels (2011) has responded to this criticism by proposing that social practice theory is useful for analyzing individual cases but offers few tools to analyze transition dynamics or identify recurrent patterns.

MLP has also been criticized and further developed by Raven et al. (2012), focusing on the spatial scale and spatial dimensions between actors to explain the evolution of socio-technical systems. They argue that transition studies and MLP have focused too much on the national level and propose a multiscalar MLP. In their view, locality and proximity matter as much as time and structure in explaining why and how changes occur in the socio-technical system. More recent criticism is presented by Sorrell (2018), who has focused on the philosophical assumption underlying the MLP. He has pointed out the potential weaknesses of MLP but also notes that the model’s flexibility allows room for reconciliation. He suggests that the tendency to add further dimensions and ideas to MLP includes the risk of making it unworkable. More emphasis is needed on the philosophical assumptions underpinning MLP. Additionally, attention should be moved away from the framework itself toward identifying specific causal mechanisms that drive transitions. It was also noted that comparative case studies and quantitative modeling tools are needed. Finally, he suggests that the distinction between the system and the regime should be dropped. He grounds his view through the notion that distinction is confusing and is interpreted in different ways by different authors. A single term for both would clarify this problem.

These presented studies are not by any means the only studies focusing on MLP and its pitfalls, but they present some of the primary criticisms it has faced. Section 3.5 will discuss recent developments in the area of transition studies and present studies that are trying to lead the field of transition studies down new and interesting paths. These studies focus on the policy processes and concrete ways to support change, studying the interaction between multiple systems, as well as examining innovation, experimentation, and learning processes and the different roles of actors.
3.2.4 Transition pathways

MLP has roots in studying technological transitions, where the starting points are changes in the regime through technological substitution. Geels (2006b) states that many sectors are organized around one dominant technology, and transitions occur through substitutions of one core technology for another. However, he notes that some sectors function through the interplay of multiple technologies. One example is the healthcare sector, where various technologies are used for different activities. In addition to technologies, service innovations are the main source of change in the social and healthcare sector. To understand changes in these heterogeneous sectors, Geels and Schot (2007) have created transition pathways. These pathways help understand that transition may happen through different paths where the pressure from levels differs, the actors have different roles, and niche innovations have diverse possibilities to break through and change the system.

In the MLP literature, the transition pathway typology has been discussed more thoroughly since 2007. The typology characterizes the overall course of innovation development and provides a frame for the analysis of transitions that have occurred. Based on Geels and Kemp (2007), Geels and Schot (2007) analyzed changes in socio-technical systems and proposed pathways for reproduction, transformation, de-alignment and re-alignment, technical substitution, and reconfiguration. They also note that transition pathways are not deterministic. For example, a transition may start with one path but shift to others. What was also new was the idea that timing and the nature of multilevel interactions are important in creating different outcomes. If landscape pressure occurs at the time when niche innovations are being developed, it creates a different transition pathway compared to a situation where niche innovations are not developed sufficiently. The same is also associated with the reinforcing or disruptive nature of niche innovations and landscape developments. Reinforcing landscape developments stabilizes the existing regime, and symbiotic niche innovations can solve particular problems in the regime. On the other hand, disruptive landscape developments create an impulse for change. Additionally, competitive niche innovations aim to replace the current regime. The combination of these criteria forms the basis of the transition pathway typology.

Geels et al. (2016) have also reformulated the transition pathway typology through the lens of local logic that views decisions, actions, or events as part of particular developments and pays particular attention to the actors involved. These transition
pathways are presented in Table 4. In the reproduction pathway, only incremental innovations occur due to incumbent actors, and the system is stable. Moderate landscape pressure exists in the transformation pathway, but niche innovations are not sufficiently developed to transform the system. In the regime, incumbent actors reorient toward innovations, which may be incremental or radical, leading to transition. In the de-alignment and re-alignment pathway, the existing regime is faced with an external shock, causing major internal problems. Incumbent actors lose faith in the system, causing struggles between the actors to fill in the existing “vacuum.” Multiple and embryonic niche innovations will compete and eventually one niche innovation becomes dominant and forms the core for the re-alignment of a new regime. The technological substitution pathway starts with a specific shock or disruptive change from the landscape at a moment when niche innovations are at a sufficient level. This pressure leads to major regime tension and creates a window of opportunity for radical niche innovations. These innovations may even come from outside the sector. The substitution pathway may follow two patterns. In the first pattern, innovations are developed to fit existing rules and institutions. In the second pathway, rules and institutions in the regime are adjusted to suit the innovations, causing changes and power struggles. Multiple and symbiotic niche innovations are developed in the reconfiguration pathway to solve problems in the regime. Symbiotic relations mean that they can easily be adopted in a regime. However, these combinations will transform the system’s basic architecture, causing a new regime to grow out of the old one.
Table 4. Transition pathways (based on Geels & Schot, 2007; Geels et al., 2016)

<table>
<thead>
<tr>
<th>Reproduction</th>
<th>Transformation</th>
<th>De-alignment</th>
<th>Technological substitution</th>
<th>Reconfiguration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Levels</td>
<td>Only regime level</td>
<td>Pressure from landscape to regime</td>
<td>Divergent, large and sudden changes in the landscape causing major internal problems to regime, multiple embryonic niche innovations</td>
<td>Specific shock/disruptive change from the landscape where niche innovations have developed sufficiently</td>
</tr>
<tr>
<td>Actors</td>
<td>Incumbent actors</td>
<td>Adjustments and re-orientation by incumbent actors (incremental or radical)</td>
<td>Actors lose faith to the system, before challenged by new entrants. Struggle with multiple groups over the shape of the new institutions</td>
<td>Radical innovations are developed by outsiders (or even actors from different sectors)</td>
</tr>
<tr>
<td>Niche innovations</td>
<td>Niche innovations without a possibility to break through the system</td>
<td>Niche innovations are not sufficiently developed</td>
<td>Multiple embryonic niche innovations; one of them becomes dominant</td>
<td>Windows of opportunity for developed niche innovations</td>
</tr>
<tr>
<td>Changes in the system</td>
<td>Incremental innovations inside the system</td>
<td>Adjustment in regime through incremental or radical innovations</td>
<td>One niche innovation becomes dominant, generating a new regime</td>
<td>Replacement of the existing regime through landscape pressure/shock and niche innovations</td>
</tr>
</tbody>
</table>

Others have also contributed to the discussion on transition pathways (e.g., Foxon, 2013; Hammond et al., 2013; Papachristos et al., 2013; Walrave & Raven, 2016). Foxon (2013) proposed transition pathways to meet the challenge of connecting actors to socio-technical change. These transition pathways focus on the actions of the actors and the governance arrangements that frame these choices. Hammond et al. (2013) proposed transition pathways for a more electric future. They see transition
pathways as socio-technical scenarios that explore the future development of a system. Their analysis shows that these scenarios could play a significant role in helping to build consensus between actors on their shared vision and the action needed for change. In addition, Papachristos et al. (2013) focused on the interaction taking place between socio-technical systems during transitions, and Walrave and Raven (2016) have made an interesting attempt to combine the ideas from TIS and transition pathways by developing a new socio-technical transition model based on a system dynamics approach.

The literature focusing on MLP has also introduced the concept of storylines (Rosenbloom, 2018; Rosenbloom et al., 2016). In storylines, the focus is on the use of language in innovation debates, and it conceptualizes the struggles in actor interaction. It also offers a more politically informed view of the transition. Storylines are actively constructed when actors respond to competing storylines. Additionally, a recent study by Rogge et al. (2020) demonstrated the development of qualitative and quantitative socio-technical scenarios for future socio-technical pathways and storylines. The storylines provide insight into how transitions can be implemented. They also explored how policymakers can use transformative policy mixes to govern transition processes. The use of policy mixes to promote transitions is introduced in Section 3.5.4.

### 3.3 Transition management

Whereas MLP is based on creating an understanding of transitions and regime shifts, TM was developed as a governance theory with a variety of tools to influence the direction and speed of transition (Kemp & Rotmans, 2003; van der Brugge & van Raak, 2007). In their study, Rotmans et al. (2001) argue that fundamental changes are needed in the way societal systems are organized to answer the persistent problems. These persistent problems cannot be solved by current policies based on traditional approaches that produce interconnected incremental solutions (Loorbach & Rotmans, 2006). The next section introduces TM as it offers a framework and tools to govern transitions within a complex system aiming to change the system toward co-created services.
3.3.1 Transition management for managing societal change

Transition research is an interdisciplinary field of study that combines innovation study, history, ecology, and modeling together with sociology, psychology, political, and governance studies (Loorbach & Rotmans, 2010). TM has roots in complexity theory, governance theory, and social theory. Complexity theory provides the inside of the adaptive steering mechanisms that need to be used to transform one complex system into another. Governance theory addresses the need to direct complex societal systems and links TM to new forms of governance. Social theory, on the other hand, starts from the interaction between structures, actors, and practices (Sondeijker et al., 2006; Van den Bosch & Neuteboom, 2017; van der Brugge & van Raak, 2007). TM refers to Rip and Kemps’ (1998) work on technological change. In their work, they classified three levels for socio-technical change: niches, regimes, and socio-technical landscapes. The interaction between the different levels is essential in transitions and has been introduced more thoroughly in the previous section.

TM was introduced as an official government policy by the fourth Dutch National Environmental Policy Plan and has been used in environmental studies and technological innovation studies in Dutch environmental policy (Loorbach & Rotmans, 2010; van der Brugge & van Raak, 2007). More precisely, TM has been mostly used in the Netherlands for managing the transition to sustainable energy, mobility, agriculture, water use, and biodiversity and natural resource transitions (Kemp et al., 2007). TM is interested in the dynamics of structural change in society and also when and how transformation can be initiated, facilitated, and influenced (van der Brugge & van Raak, 2007). On a practical level, TM can be defined as a process to influence governance activities in a way that leads to accelerated change directed toward sustainability ambitions (Loorbach & Rotmans, 2010). TM tries to influence, coordinate, and bring together actors and activities so they reinforce each other to be able to compete with dominant actors and practices.

Kemp et al. (2007) have identified five key problems in managing societal change. The novelty of TM is that it deals with them in an integrated way that is important in persistent problems. First, complex societal problems are typically characterized by disagreement concerning what the problem is and how it can be solved. Nonetheless, key parameters for future systems and a better understanding of the systemic impacts can be analyzed together with different stakeholders. Second, the
distributed nature of control, such as different government layers and silos, makes unitary actions impossible. The need is for a new network management tool to help actors formulate joint visions and common goals. Third, short-term action for long-term structural change is a problem for policy-makers, and there is little information on how this can be achieved. However, experiments are one way of identifying problems and creating networks. Fourth, there is a danger of being locked into a solution that is not optimal from a long-term perspective. In contrast, there should be support for different options. Finally, transitions might take one generation or more, which is difficult to accept by policy-makers and politicians aiming for faster results. To have the patience to wait for long-term results, they need to be convinced that an identified problem needs fundamental change. Transition arenas are one way of providing the context in which the problem and long-term development can be analyzed. In TM, these elements are integrated through the interaction of three levels: the strategic level, tactical level, and operational level. Loorbach and Rotmans (2010) have also added reflexivity as an activity related to evaluating the situation. This relies on the interaction between processes at these levels by combining network governance, self-organization, and process management. In other words, they see that TM tries to improve the interaction between different levels of government to foster transition. The activities are aimed at influencing, organizing, and coordinating processes on the strategic, tactical, and operational levels so that these processes are aligned and can reinforce each other. TM also offers a framework for policy integration between science policy, innovation policy, and sector policy (Kemp et al., 2007).

In the TM studies by Rotmans et al. (2001), Loorbach and Rotmans (2006), and van der Brugge and van Raak (2007), transition is seen to consist of four phases. In the “pre-development” phase, large-scale trends put pressure on the regime. Innovations are developed, but they have a hard time breaking through. In the next “take-off” phase, innovations break through, and a new regime starts to arise. Then, the internal structure of the system is visibly reorganized in the “acceleration” phase. The change takes place through the accumulation of sociocultural, economic, ecological, and institutional changes that react to each other. In the final “stabilization” phase, the speed of social change decreases and the new organization optimizes its processes to be more efficient.
3.3.2 Transition management framework

TM has some underlying characteristics. Rotmans et al. (2001) and Loorbach and Rotmans (2006) define it as providing long-term thinking to provide a framework for shaping and evaluating short-term policy actions. In a policy context, it should be seen as complementary to current policy by bringing value and integrating long-term perspectives. It is also based on viewing change from the point of view of different domains, actors, and levels. They see that the focus is on learning, system innovations, and keeping options open for different options for change. Participation and interaction between stakeholders are essential.

Loorbach and Rotmans (2006) and van der Brugge and van Raak (2007) have also defined TM operational process cycles to structure and coordinate the activities. First is the establishment of the transition arena, followed by the creation of a shared problem, long-term vision, transition pathways, and agendas. The third phase is about mobilizing actors and knowledge development through experimentation. In the final phase, evaluating the transition process and adjusting the perception of the problem are the key goals. The cycle is meant to act as a guideline for action, and at the center is the idea of learning-by-doing.

TM portfolios include systemic instruments: a complex system analysis, sustainability visions, a transition arena and transition pathways, a transition agenda, transition experiments, monitoring and evaluating, and transition coalitions and networks (Loorbach & Rotmans, 2010; Van den Bosch & Neuteboom, 2017). The TM cycle (Loorbach & Rotmans, 2006, 2010; van der Brugge & van Raak, 2007) integrates and structures the different instruments in four activity clusters. The TM operational model consists of four components: 1) problem structuring and establishment of the transition arena, 2) developing the transition agenda, coalition, images, and transition paths, 3) mobilizing actors and executing transition experiments, and 4) monitoring, evaluating, and learning from the transition experiments and making adjustments to the vision, agenda, and coalitions based on these. Activities are usually run in parallel and should be adapted according to each situation. Kemp and Rotmans (2003) note that there are multiple transition cycles in TM programs, and each takes about two to five years depending on the practical context. What is important to remember is that even though TM is a steering process, any tendency to institutionalize or control a TM process should be avoided (Avelino, 2009).
According to Loorbach and Rotmans (2010), learning-by-doing is a useful strategy for guiding social innovation processes. The transition arena brings together frontrunners to co-produce a common language and a future orientation. By bringing together diverse actors for debate and experiments, conditions for scaling up innovations can be created. TM aims for incremental innovations in everyday practices and thus steers the change toward transition.

3.3.3 The role of the government in transition management

TM can be defined by Kemp et al. (2007) as a multi-level model of governance that shapes processes of coevolution using visions, transition experiments, and cycles of learning and adaptation. It helps societies transform in a gradual and reflexive way through guided processes. TM combines the capacity to adapt to change, as well as shaping the change toward positive goals. Kemp et al. (2007) note that TM has shown that societies can break free from path dependencies, such as practices and technologies, by engaging in coevolutionary steering.

With this definition, the government plays a leading role in TM. The role of the government is different in each phase of the transition process and is described by Rotmans et al. (2001) as a facilitator, stimulator, controller, and director. They add that governments can also act directly in the transition process by stimulating experiments. TM can help coordinate public policy and legitimize policies. Kemp et al. (2007) argue that existing policy frameworks, together with fragmented policy arenas, with straightforward planning and incremental strategies, are not suitable for dealing with complex societies and persistent problems. They see that governance needs to be more open, adaptive, and oriented toward learning and experimenting.

The same issues are also highlighted by Voß et al. (2009). They have also pointed out that there is growing interest in stepping away from incremental development toward long-term policy, especially in sustainable transition studies. They understand long-term policy design “as the development and implementation of policy strategies that seek to radically change key societal structures.” TM can be seen by Voß et al. (2009) as a new type of long-term policy with a conceptual framework and concrete policy experiments. It can meet persistent problems that are difficult to solve through conventional policy approaches. As it concentrates on nurturing and growing societal change, it differs from the old planning and controlling approach of long-term policy. However, radical innovations in governance practices are
needed to bridge the gap between established policy paradigms and new forms of experimental learning associated with the implementation of long-term policy design.

The role of government in TM has also faced criticism. Ashford and Hall (2015) have criticized TM for being too late to have the necessary impact on sustainability challenges that need to be solved quickly. In their view, 25 years is too long to wait for the transition. In their study, they focused on the use of TM and SNM as tools to achieve sustainable development and the problems related to these approaches. The critical notions are drawn from the work of Tukker et al. (2008), Dewulf et al. (2009), and Shove and Walker (2007). They also note that TM neglects the role of consumers and assume that there are governmental transition managers who can apply management tools for clear targets. There is a danger that the transition managers will not be able to obtain future views from all the necessary stakeholders, and the future agendas may be based on incumbent actors. In addition, a study by Avelino (2009) showed that transition terminology is, in many cases, unknown to the participants, and project leaders in TM experiments did not have knowledge on how to apply TM in specific project contexts. TM could be useful but only if the government plays a stronger role in stimulating disruptive innovations and the diffusion of technology (Dewulf et al., 2009; Shove & Walker, 2007; Tukker et al., 2008).

Voß et al. (2009) also point out the problem of participation in the transition processes from the point of view of long-term policy. Using a long-term policy, where social learning is highlighted, raises the question of who is involved in the processes. Loorbach and Rotmans (2010) have argued that the transition arena has a pivotal role, and it should be ensured that nonregime players are in the majority. They see that the regime has an almost unstoppable tendency to want to control the transition process. The danger is that the incumbent actors with power in the existing regime are concerned about their future place in the system. Based on the fear of giving away their steering power, the regime creates institutional constituencies that reduce space from the frontrunners. Avelino (2009) points out that it is important to create settings where niche actors can empower themselves and be allowed to freely speak their minds and disagree with regime actors. Empowerment should also be understood as something more than just participation. Important aspects involve a sense of meaning, competencies, and impact regarding everyday tasks.
The reality is that the empowerment of some actors will lead to the empowerment of others. Due to this concern, they may dominate the learning process and transition arenas and, therefore, endanger the legitimacy of TM to shape the future. Therefore, Voß et al. (2009) see that the selection, implementation, and evaluation of experiments need to remain a political process. They add that fostering more and equal participation does not happen without careful planning and that participation needs to be designed in the process at the beginning. To foster societal learning, innovative ways to encourage participation are needed. They see that promoting different transition arenas is also a convenient way to commit different stakeholders to the processes of transition. However, the transition process is full of obstacles, barriers, and surprises. Because of this, concrete results and impacts may hardly be possible to perceive at the beginning of the process. Usually, the participants have a hard time grasping the entire problem and seeing the bigger picture. As a solution, Loorbach and Rotmans (2010) highlight the importance of following the TM structure.

3.3.4 Transition management in healthcare

Transition policies have been developed in the areas of energy, building, healthcare, mobility, and water management. Transitions take several years or even decades, and therefore empirical examples of cases that have gone through transition are rare. However, there are examples of cases that have utilized TM, and papers have been written about the learnings from these experiments (e.g., Broerse & Grin, 2017; Heiskanen et al., 2009; Loorbach & Rotmans, 2010). The framework of TM has also been utilized in healthcare in Finland, but these examples are introduced in the next paragraph.

Van den Bosch and Neuteboom (2017) presented a transition program in the Dutch care sector. Altogether, 26 transition experiments were executed in two rounds between 2007 and 2010. The aim was to explore radically new ways to meet the needs for long-term care among the Dutch population. The transition program did not follow the typical TM operational model. It started from actual ongoing experiments, and a transition arena was established at a later stage. The program had experimental characteristics. Aside from the transition experiments, it allowed for learning-by-doing and doing-by-learning, both with practitioners and researchers. The reasoning behind the program was persistent problems, such as healthcare financing mechanisms that financed production instead of prevention and the
standardization and specialization of the care system that neglected individual needs and values. The basic assumption was that the societal system for long-term care in the Netherlands is mostly unsustainable. In addition, symptoms of the unsustainable situation were discovered. These were, for example, low levels of internal cooperation, lack of external societal integration, increasing costs, dissatisfied care professionals, shortage of qualified professionals, and pressure on relevant human values. The symptoms were due to trends such as individualization, the decline of traditional institutions, the reconstruction of the patients as consumers, and increasing reliance on professionals. The symptoms were seen as systemic as they are highly interrelated; transcend individuals, organizations, and sub-sectors within the care system; and have a structural and cultural basis.

Van den Bosch and Neuteboom (2017) argue that, due to the systemic nature of the symptoms and the persistent underlying problems, conventional policy measures would not be able to tackle the problems. TM was seen as a policy method that would better acknowledge the complexity of the problem and make space for experimenting with new ways of providing care. The experience from the transition program highlighted some relevant issues. To start with, it is important to evaluate how the transition experiments will fit the overall portfolio, and end-user participation should be increased. Additionally, the development of radical innovations requires room for failure, which is the idea behind the TM principle of continuous variation and selection. A crucial question that was raised after the program was to what extent the transition experiments would be able to be scaled up and thus influence the regime and how TM could support this process.

3.3.5 Transition management in Finland

Societal embedding of innovation approaches was developed by VTT in different research projects in the 1990s. The approach has been used in Finland to enhance novel healthcare services and environmentally friendly innovations (Kivisaari et al., 1999, 2004, 2013; Leväsluoto & Kivisaari, 2012; Nieminen & Hyytinen, 2015). In the early 2000s, the societal embedding of innovation was linked to the larger TM framework, which enabled major extensions to this Finnish approach. In particular, MLP, as part of TM literature, offered perspectives and tools to help understand the dynamics of innovation, which are systemic in nature. In MLP, the interplay between the landscape, regime, and niche levels is emphasized and is essential for change. SNM is also linked to TM and offers viewpoints on how to scale up experiments.
created in niches. For the societal embedding of innovation, these linkages make it possible to link local niche development activities to larger societal change processes. This has strengthened the theoretical foundations and made it possible to approach political decision-makers in a new way. Since 2000, multiple societal embedding projects have been carried out, especially in healthcare and the energy sector (e.g., Kivisaari et al., 2004).

At the core of societal embedding is the aim of ensuring the societal quality of the innovations that are being developed. This calls for collaboration between different stakeholders and actors, which is presented in Figure 3. When pursuing systemic innovation, it is important to include societal needs and impacts in the discussion. Kivisaari et al. (2009, 2013) identified four characteristics that need to be included in the dialogue: 1) the efficiency of service production and the well-being of the staff involved, 2) usefulness and value to users, 3) correspondence to local needs with cost efficiency, and 4) correspondence with societal needs and their future wider impacts.

Figure 3. Key actors in the societal embedding of innovation (Kivisaari et al., 2013).
From a practical point of view, Kivisaari et al. (2008, 2009, 2013) have noted that societal embedding of innovation aims at facilitating and initiating new innovations in a multi-actor network. An important objective is to create a dialogue between different actors and give them the possibility to create a shared understanding of elements of the desired solution. By opening up the perspectives of the different actors, the societal embedding of innovation aims to produce mutual learning. The approach provides information about the needs and worries of the identified actors and conceptions of the discussed change. An important aim is to identify aspects that prevent or facilitate changes and bring them into shared discussions. The approach is based on thematic interviews, observation, and workshops. Before the interviews, a stakeholder analysis is often carried out to identify all the key actors. The information from the stakeholder analyses and interviews is used to plan common workshops. The workshops aim to discuss different opinions, create a more in-depth understanding of the change, and create collaboration and trust.

Transition as such has also raised interest in Finland. Heiskanen et al. (2009) present experiences from two case studies of transferring the TM model into the Finnish context. However, only the main idea of the transition model was used, not all the elements. The case studies were related to national-level environmental policymaking and innovation policy for public health to facilitate the development of sustainable solutions. The societal embedding of innovation was implemented in a healthcare case study. The represented cases in Heiskanen et al. (2009) show that some core elements of the model, either top-down or bottom-up, were lost in translation. TM was developed in the Netherlands and fits their policy context well (Voß et al., 2009). There are factors that have hindered the adoption of TM in the Finnish context. Environmental policy actions are increasingly formed in the EU, and the role of international agreements has increased. This is not the case in social and healthcare, where policy action is more in the hands of the government. They also conclude that policy design changes when moved to another country because local institutions and policy dynamics facilitate and constrain the adoption.

Foxon et al. (2004) note that the transition approach was formulated in the context of Dutch tradition, which involves more consensual and participative policymaking compared to many other countries. However, they also point out that TM has many features that can be applicable to other policy regimes. These are the focus on long-
term goals, experimenting, linking stakeholders closely together, mixes of policy instruments, and the role of learning-by-doing. In addition, the underlying principles of TM fit well with the broader shift in governance from command and control to negotiated agreements and participatory forms of policymaking, which makes TM more easily adoptable (Heiskanen et al., 2009).

Currently, TM has been studied in Finland in different universities, institutions, and projects (e.g., Hyysalo et al., 2019; Kivimaa et al., 2019; Martiskainen & Kivimaa, 2019). Similar to transition and TM studies, the Finnish studies mostly concentrate on sustainability issues. For example, there is a large research project called “Smart energy transition” that examines the disruption and transitions of the Finnish energy sector toward sustainability.

3.4 Strategic Niche Management

What is interesting in the TM model is the core idea of fostering and steering incremental innovations toward system change. Even though TM achieves transition gradually without destructive elements, it can also create space for radical innovations that have the potential for more rapid transitions. The creation of these spaces is next discussed in SNM, which focuses on the creation and management of niches and transition experiments. Experiments are the focus of this dissertation, as it is a place where innovative co-created services are developed.

Socio-technical regimes are a very hostile environment for innovations aiming to create a change. Therefore, a policy instrument focusing on creating and supporting niches is needed. SNM was introduced by Schot et al. (1994), Kemp (1994), Rip and Kemp (1998), and Kemp et al. (1998) as a research approach and policy tool to develop sustainable niche innovations toward broader societal change. The definition of Kemp et al. (1998, p. 186) is that “SNM is the creation, development and controlled phase-out of protected spaces for the development and use of promising technologies by means of experimentation, with the aim of 1) learning about the desirability of the new technology, and 2) enhancing the further development and the rate of application of the new technology.” The idea behind the approach is that technical change is locked into dominant technological regimes, and SNM offers a method to accelerate a transition into a new regime by creating and/or managing niches for promising technologies.
3.4.1 Strategic Niche Management toward socially desirable innovation

SNM is based on two theories of technological change: social constructivism and evolutionary economics (Verbong et al., 2008). The social construction of technology analyzes technological change as an outcome of the interaction of different groups. The approach sees technological change as a social process in which learning and network building are crucial processes. Rip and Kemp (1998) explain that the selection environment can be actively modified to ensure the survival of new technology. One example of this kind of environment is niches, where the new technology can be protected against market selection. For technological change, niches are socially constructed and consist of networks and actors willing to invest time and resources in developing innovations. By combining these theories, SNM is able to look at the content of learning and the changes that happen in perceptions and ideas. They also add that it looks at not only the network’s knowledge flows and exchange but also the social dimensions, such as coalitions, trust, conflicts, and tensions.

SNM was developed to serve the management of a particular type of innovation: socially desirable innovation serving long-term goals and radical novelties that face a mismatch with regard to existing infrastructure, regulation, and user practices (Schot & Geels, 2008). The early work of SNM researchers focused on the question of how and under what circumstances the emergence of a technological niche is possible. Niches are at the core of the SNM as a place to develop and test new technologies together with different actors. Niches are referred to as protective spaces where learning processes with several dimensions are fostered and technologies are protected from mainstream market selection (Hegger et al., 2007; Kemp et al., 1998; Schot & Geels, 2008). They also provide space for interactions and the building of networks, learning processes, and articulation of expectations and visions (Schot & Geels, 2008). Weber et al. (1999) conclude that SNM aims to make the transition from technological niches, where experiments are protected, to market niches, where technology or a concept survives under market conditions. Kemp et al. (1998) note that niches are platforms for interaction, and they cannot be controlled. However, through SNM, governments or other actors can try to contribute to the niche formation processes by setting up experiments. Experiments are also at the heart of SNM as a tool to develop technologies (or innovations) together with users, policymakers, and special-interest groups (Schot & Geels, 2008). Schot et al. (1994) note that experiments are needed in the technology development
process to ensure technology becomes socially embedded. Experiments aim to learn about the needs, problems, and possibilities.

3.4.2 Linking Strategic Niche Management to ongoing changes

The early work of SNM assumed that development activities in the niches would end up producing transitions relatively quickly (Schot & Geels, 2008). However, it was realized that the journey from experimentation to regime shift is more complicated, and external factors play a crucial role. Niche innovations have little opportunity to transition without the help of broader forces and processes. Due to this notion, MLP was highlighted in SNM to bring more understanding of the complex process of transition. MLP is useful in contextualizing SNM, where niches are essential for regime shift but cannot do it on their own (Ruggiero et al., 2018; Schot & Geels, 2008). According to the ideas of MLP, socio-technical regimes provide stability for the actors but are therefore path-dependent and can be locked into existing technologies and services. Raven et al. (2010) point out that regimes are often used in a negative way to explain why innovations have a hard time breaking through. In contrast, the niche concept is used in a positive way, explaining how radical change can happen. However, the socio-technical regime can change, and niches are important places where new path-breaking innovations emerge. Niches can be defined as constellations of culture, practices, and structures that deviate from the regime and can meet specific societal needs in unorthodox ways (Van den Bosch & Rotmans, 2008).

SNM combined with the ideas from MLP sees that niche innovation needs to be linked up to ongoing processes at the regime and landscape levels. This coevolution can happen in different ways. Schot and Geels (2008) presented two ways this coevolution can happen. Niche innovation can be adopted by a regime to solve a certain problem. The learning processes can produce more in-depth results and lead to a substantial reconfiguration of the regime without competition. Another coevolution pattern was the translation from niche experiences to the regime, where regime change occurs when niche lessons were translated and picked up by regime actors. In these coevolution patterns, the idea is that the niche innovation does not substitute the existing regime but contributes to changes in behavior and practices in the existing regime. This shows that niche innovations can play a different role in transitions. This notion has led to attempts to distinguish different transition pathways (these pathways have been presented in Section 3.2.4.).
SNM scholars have tried to answer the question of why certain innovation journeys have been successful or failed. Success or failure has been explained by an analysis of the interaction between three internal niche processes, for example, presented by Raven et al. (2010). The first process is the shaping of expectations and visions. Building social networks is the second process, and the third process is building a good learning process. Learning does not happen only in one individual experiment; it is most fruitful when experiences from multiple experiments are exchanged. Schot et al. (1994), Kemp (1994) and Kemp et al. (1998) note that SNM was not targeted just for governments. A niche manager could be, for example, a state policymaker, local authority, NGO, citizen group, a private company, or an independent individual. Nonetheless, governments have a special role as enablers or facilitators, ensuring social learning processes and upscaling successful experiments. This is due to the argued fact that niche experiments have to be coordinated toward one another to contribute to transition (Hegger et al., 2007).

Raven et al. (2010) highlight that, from the practitioners’ point of view, possibilities for guiding transitions are limited, because it depends on actors, developments, and events on other levels as well. The landscape level is not something that an individual actor can influence, but it has a major influence on their choices and behavior. Regimes have a very stable institutional structure, and individual actors have a limited possibility to influence these directly. They add that, at the niche level, the institutional structure is poorly developed. This gives practitioners the possibility to develop the institutional structure according to their own preferences.

### 3.4.3 Strategic Niche Management as a policy tool

Raven et al. (2010) have noted that SNM has been regarded as a research model as well as a policy tool. As a research model, it has been used to better understand the role of transition experiments. In terms of a policy tool, SNM has been applied to inform policymakers about future sustainability policies. SNM has been seen as different from other policies as it combines the knowledge and expertise of users and other actors in the technology development process and highlights learning and institutional adaptation. SNM has many similarities with TM, where transition experiments are used in interaction with other systemic instruments. Transition experiments are constructed from jointly created visions and fit within identified transition pathways. In this way, it differs from the SNM, where the focus is mainly on setting up experiments (van den Bosch & Rotmans, 2008). However, Hegger et
al. (2007) have pointed out that the role of niches is emphasized too much, and more emphasis should be placed on looking at how processes should be organized to make a regime shift more likely and how niche approaches should be designed to have an influence at the regime level.

For SNM, Schot and Geels (2008) have concluded that SNM has helped identify dilemmas of developing sustainable innovations toward transition. Incumbent actors are important, but, for radical innovation, outsiders have fresh ideas, and they are not so embedded in the current regime. Hegger et al. (2007) and Ashford and Hall (2015) also point out an interesting question of whether and to what extent niche experiments should differ from an incumbent regime. If the socio-technical context in the niche differs too much from the regime, it complicates the application of the innovation. On the other hand, if niches grow alongside the existing regime, they are unlikely to have radically different practices and rules, making the creation of radical innovation difficult.

It has been questioned whether niche protection mechanisms focus too much on SNM. Schot and Geels (2008) have responded to this criticism by noting that protection is essential in the early phase of niche and innovation development, but the idea of SNM is that the amount of protection is reduced in later phases. Protection is needed, but there is a point where it is important to expose an innovation to selection pressure. Smith and Raven (2012) have analyzed the concept of protection in more detail and what it means. According to them, effective protection has three processes: shielding, nurturing, and empowerment. They added the processes of empowerment, explaining how path-breaking innovations escape the protective space and interact with wider regime change processes. Empowerment refers to either processes that make a niche innovation competitive within an unchanged selection environment (fit-and-conform) or processes that contribute to changes in mainstream selection environments in a way that is favorable to path-breaking niche innovations (stretch-and-transform). Highlighting the process of empowerment, they stress the importance of linking niche actors to wider processes of social change to promote transition.

Raven et al. (2016) studied the protective spaces associated with the shielding of niche innovations. Their focus was on technology development, and they studied how and by whom protective spaces are created, maintained, and expanded. This is different from previous research, where the focus had been on the development of
expectations, actor networks, and social learning processes. In their study, Raven et al. (2016) focused more on the dynamics of protective spaces and further developed the concepts of shielding, nurturing, and empowerment developed by Smith and Raven (2012). They noted that the developers of new technology usually use preexisting passive spaces, such as generic innovation schemes and geographic locations, for the shielding of technology development. More active measures, for example, public policies, are used afterward. The difference is that the fit-and-conform empowerment strategy performs in an unchanged socio-technical environment, whereas the stretch-and-transform strategy tries to reframe the rules of the game. In the latter, the technology developers need to gain political power nested in the experience, institutional position, and connections of influential actors. Due to these difficulties, the fit-and-conform strategy is more common than the stretch-and-transform strategy. They also add that, in order to achieve empowerment, innovation developers must try to link their socio-technical narratives to existing sociopolitical agendas. The narratives are created to construct a supporting actor network and mobilize institutional and infrastructural opportunities.

However, Lovell (2007) notes that SNM assumes that governments are able to make strategic decisions about system change and that they have the power and political will to do so. In practice, well-planned and long-term management is rare. Governments are deeply embedded within the socio-technical system, and therefore they face difficulties in bringing about radical changes. Also, Ashford and Hall (2015) have noted that incumbent actors are, in many cases, too much involved in the transition process, focusing the attention on system improvement instead of system innovation. In addition, SNM has been criticized (Hegger et al., 2007; Hielscher et al., 2013) as focusing too much on technology and neglecting social aspects of innovation. SNM stresses the importance of coevolution between technology and society, but technological development remains the starting point for niche experiments. The coevolution of technology and society needs to be emphasized.

Lovell (2007) argues that, for these reasons, SNM needs to be broadened. It should pay more attention to the messiness of socio-technical change. It is also acknowledged that niches will fail if governments are the only ones taking responsibility for them, and a multi-actor approach is required. Still, governments are seen as the main actors in the management of niches, and the role of government is seen as unproblematic and apolitical. Greater allowances need to be made for
nongovernmental actors so that they can take a leading role in niche management. Schot and Geels (2008) argue that the critique of SNM as being overly top-down, created, and managed is not what SNM has focused on, and it aims to have different actors to lead the niche formation process. In SNM, there have been attempts to create workbooks and guides for practitioners to implement experiments and create niches supporting the push toward a sustainable transition (e.g., Caniëls & Romijn, 2006; Mourik & Raven, 2006; Raven et al., 2010; van den Bosch & Rotmans, 2008; Weber et al., 1999). By practitioners, the authors mean actors who are practically oriented and may, for example, consist of policymakers, companies, or consultants. One example of such workbooks for SNM was published by Weber et al. (1999), and it is targeted toward audience interested in the opportunities and problems related to the introduction of new technologies. The workbook provides an overview of the issues that are crucial to the success of a socio-technical experiment and niche formation process. There are five main stages that should be seen as overlapping and interrelated activities. These are identifying a new technology/concept, designing an experiment, implementing the experiment, expanding the experiment to a niche, and then reviewing the protection of the experiment. These five stages have 17 key issues, dilemmas, and trade-offs that are important to the success of SNM experiments. Many of these problems relate to managing expectations, learning, and the network, which are crucial in niche dynamics.

3.5 Future direction in transition studies

The field of transition studies has mostly focused on sustainability issues and environmental problems, such as climate change. However, Köhler et al. (2019) note that there has been an expansion into other societal domains, and the field has diversified in terms of topics. In their study, they showed that there had been a steady increase in publications and citations in peer-reviewed articles starting from the year 2000. For example, in 2018, more than 500 papers were produced in the field of sustainability transitions. There are studies focusing on MLP, TM, or SNM, or they may focus on developing transition studies as an entire research approach.

Future directions and debates in transition studies have been identified by transition scholars and are presented next. These research lines and debates are, in many cases, overlapping, but they demonstrate the new themes that have captured the interest of scholars. As sustainability issues are at the core of the transition literature, most
publications have focused on these issues. However, these points of interest are not merely in the interest of sustainability and climate change scholars but are also relevant for other domains such as social and healthcare. In addition, future views in transition studies interestingly demonstrate how transition studies have evolved toward offering public policymaking concrete tools to understand and promote socio-technical changes.

3.5.1 Future directions and debates in transition research

Geels et al. (2018) have identified key research debates in socio-technical transition studies (with a focus on low-carbon innovations). They have divided the themes into emergence, diffusion, and impacts of innovation to analyze and understand the socio-technical transition (Figure 4). In addition, they have identified cross-cutting socio-technical debates that relate to the co-construction of impact and policy, politics, and governance in transition studies. The findings from Köhler et al. (2019) are added to this illustration as they have gathered the future trends in transition studies. Based on this illustration, future directions in the field of transition studies are presented in the next sections. The main features of the themes of emergence, diffusion, and impacts of innovation are discussed first, followed by a more in-depth presentation of the cross-cutting themes. The presentation will focus on future directions in policy and governance of innovation since they are of particular interest in this dissertation. Moreover, many of these prospects have been raised in public policy research as important features in the systemic change toward the co-creation of social and healthcare services. What is also interesting in future research debates in transition studies is that it demonstrates how the field of transition studies is moving toward solving the problems of society and not just describing the process of transition.
Figure 4. Future directions and debates in transition studies (modified from Geels et al., 2018; Köhler et al., 2019).
3.5.2 Emergence, diffusion, and impact of innovation in transition studies

On the emergence of innovation, the debate has focused on several issues related to transition. According to Geels et al. (2018), the first debate concerns which actors drive innovation and what the roles are of incumbent actors and outsiders. They note that recent work has pointed out that incumbent actors can also develop radical innovations, and it is not just outsiders who drive these types of innovations, as has been assumed in earlier transition studies. This comes to the question of power and power relations between actors in the transition processes, which have been studied by Avelino and Wittmayer (2016). They see that transition studies lack a structured understanding of actors in transition and offer the multi-actor perspective (MaP) as a tool to understand these relations. This can also be used to select and involve stakeholders in the transition process. What is interesting is that MaP points out that actors can have different roles; for example, a social and healthcare customer can also be a policy-maker, a volunteer, and a taxpayer. Understanding who the actors are and how the power relations are shifting is important for the theoretical understanding, as well as for the applications of transition governance.

Geels et al. (2018) also seek to study the changes in user practices and the role of users, even though it is a somewhat new area of research in transition studies. In addition, Köhler et al. (2019) have noted that the role of users is an established research area in innovation, science, and technology studies, but it has only slowly entered transition studies. They add that the understanding of users during socio-technical changes has shifted from seeing them as passive consumers to active players. Regarding the role of users and empowerment, Avelino and Wittmayer (2016) emphasize that, instead of focusing only on the question of who has power and who does not, the focus should be broader. There should be questions about “how different actors exercise different kinds of power at different points in time in different roles.” Avelino and Wittmayer (2016) also note that empowerment has been seen from different perspectives in transition studies. It can be understood as a systemic transition pattern, a functional property of niches, or empowerment at the level of individual capacities. They point out that, in many cases, the idea of empowerment is that the state or policymakers try to empower the community. However, there are difficulties in implementing these policies. This can be seen in policy programs, for example, that are designed to empower people but at the same time require people to already be empowered to implement the new policy design.
The lack of empowerment can be seen as a disagreement with the values of the means or the outcome or simply a lack of incentives or capacity to take the actions needed. To be empowered, individuals need to be motivated through a sense of the impact, competence, meaning, and choice of the activity. They add that this comes back to the roles of different actors and how to motivate them. For policymakers to reach the objective of community empowerment, they need to think about the roles of the individuals they are approaching. Are they consumers, voters, taxpayers, or family members?

The second issue highlighted by Geels et al. (2018) is the question of upscaling niches. An interesting question is whether upscaling niches is the only way to produce a transition or whether it could happen otherwise. Upscaling is defined by Ruggiero et al. (2018) as a means by which experiments that are applicable are moved to the mainstream. Concepts of broadening and accumulation have also been used, and they refer to the idea of repeating an experiment in a new context or linking it to another domain. They see that upscaling can also be understood as a process where practices that are developed in niches are embedded into a regime. Ruggiero et al. (2018) note that, in many cases, learning between different niche projects is limited. In projects aiming to achieve systemic change, where the niche is seeking large-scale transformation, there is more networking and learning, which is important to scale up. They also point out that the lack of shared vision between the social groups prevented scaling-up. A study was made in the Finnish context related to civil society involvement in renewable energy generation, and the result was interesting because the same problem was also identified in Finnish healthcare (Leväsluoto & Kivisaari, 2012). Another aspect, also noted by Hargreaves et al. (2013), preventing scaling-up was the lack of intermediaries who can aggregate knowledge, create networks, and assist in niche development.

Third, the significance of place and geography has emerged, especially the question of why innovations develop in some places and what the role of local and regional policies and governance are in the emergence and diffusion of innovation. The role of policies and government is presented in Section 3.5.4. in more depth. Fourth, the business dimension and new business models have not received much attention in transition studies. Nonetheless, it is important to note that new business models can be an important driver or barrier to niche innovation. Fifth, studies of interaction between multiple systems and innovations are not listed in the list of Geels et al. (2018) but are highlighted by Köhler et al. (2019). This has raised much interest in
transition studies, and according to Köhler et al. (2019), transition studies need to move forward in this direction to study and develop innovations to answer the persistent problems of our society. Geels (2018a, 2018b) has also studied socio-technical change that can happen through the interaction between multiple innovations. Geels (2018a, 2018b) note that one of the problems has been that the published research papers in the transition literature have mostly focused on the emergence of single disruptive niche innovations in socio-technical transitions. This has led to the impression that niche innovations drive the transition, which goes somewhat against the original idea and interest in system innovations. In addition, the focus on niche innovations has the danger of undermining the potential for incremental change. Due to these issues, Geels (2018a, 2018b) focused on broadening the MLP framework. This extension aligns with the development of socio-technical literature, which has started to address wider topics. The whole system reconfiguration approach takes the next step in this aim of broadening MLP. The reconfiguration approach understands that transitions may consist of both radical component substitution and incremental system improvements. It also notes that system reconfiguration might need to have multiple niche innovations, and changes need to happen in multiple regimes. For example, at the regime level, the social and healthcare system is influenced by broader systems. Thus, system reconfiguration is understood to be the result of multiple change mechanisms instead of a singular disruptive innovation. This new approach is interesting from the point of view of this dissertation because it pays attention to larger systems struggling with persistent problems, such as the renewal of social and healthcare systems.

Diffusion and embedding of innovations are crucial to creating new socio-technical systems and are the second theme in future research lines in transition studies. Geels et al. (2018) see that these processes are not straightforward and happen in the context of existing systems. They note that research on diffusion has concentrated mostly on the diffusion of single technologies rather than multiple ones. Additionally, the diffusion of systemic innovations has not been addressed systematically. Moreover, the debate is gaining momentum on how diffusion can be accelerated. Transition studies see acceleration as a political challenge. The focus should be on political conditions that can change, for example, through external crises or changes in public opinions.
Geels et al. (2018) have divided diffusion models in their study into three families developed in the economic, sociological, geographical, and psychological literature. These are adoption models, socio-technical models, and spatial models. Not going into the detail in these models, one interesting model is the contextual co-construction model, which focuses on the societal embedding of innovation into the existing environment. This is categorized under socio-technical models, which highlight mutual adjustments between innovation and the wider context. Kanger et al. (2019) have studied this broader understanding of diffusion and developed a perspective on the process of societal embedding. Their study is interesting because it stresses the importance of linking different development paths to facilitate the diffusion of innovation. Even though the focus of the work by Kanger et al. (2019) is historical and technological, it offers valuable learnings for the societal embedding of innovation in the context of social and healthcare, where the innovations are, in many cases, for the services they provide. The focus should be on complementary changes in multiple dimensions and outcomes. In other words, the diffusion of innovation requires the simultaneous construction of a broader socio-technical system. In addition, national embedding is dependent on development at the transnational level.

Geels et al. (2018) note that the impacts of innovations have gained less attention in socio-technical research than emergence and diffusion, and the focus has been on the transition process rather than its outcome. It is difficult to capture all the important and complex factors that shape the course of transition. However, there are impact scenarios and modeling tools that have been used to assess future development and to forecast future impacts but are not focused on in this presentation.

### 3.5.3 Co-construction of impacts

In addition to the themes of emergence, diffusion, and impacts, Geels et al. (2018) have identified future cross-cutting socio-technical debates. The first focuses on the co-construction of impacts. The impacts of innovations are co-constructed by the choices of the earlier processes of emergence and diffusion. This means that the impacts arise from the way innovations are socially embedded. In this way, the same innovation can have different impacts according to its location. Embedding innovations has attracted interest in transition studies in recent years. The question
is not just about the diffusion of an innovation or scaling up a niche innovation but more about embedding innovations in current structures.

Sengers et al. (2020) have conceptualized embedding mechanisms. They see that there is an assumption that experiments will scale up to system change, but the processes are not well known or explained. The presented mechanisms show that embedding experiments can follow a variety of paths. Their work captures the puzzling question of why experiments tend to be isolated and are taken into use in other locations or contexts. Instead of using the concept of diffusion or scaling up, which has been used mostly in transition studies, Sengers et al. (2020) used the concept of embedding. By embedding, they refer to the mechanisms where innovation is embedded in the economic, social, and cultural system. They also use the term dis-embedding, meaning that, for an experiment to be transferred, the experiment needs to be loosened or extracted (whole or in parts, directly or indirectly) from its original context. This means a process of reconfiguration for the new context.

3.5.4 Policy, politics, and governance

The second debate is focused on the role of policy, politics, and governance that shape the emergence, diffusion, and impacts (Geels et al., 2018) of innovations. This is of high interest to this dissertation and is therefore presented more comprehensively. It is noted that instead of focusing on single policy instruments, the focus should be on comprehensive policies and the whole system introduced by Geels (2018a, 2018b). A growing number of studies have focused on the issue of how to steer change from a governance and innovation policy perspective (Geels et al., 2018; Köhler et al., 2019). Transitions are political processes that are closely related to governance. Kern and Rogge (2018) have studied policy and policy processes and their usefulness in transition research. They see that transition research could benefit from the use of policy studies to better understand the coevolution between policy and socio-technical change. Grand social challenges also require the use of long-term policy strategies with stable targets. However, there are always debates about the desirable direction of a transition, ways to steer this process, and the winners and losers of the outcome (Köhler et al., 2019).
3.5.4.1 Mission-oriented innovation policy

Innovation policy has undergone changes due to the increase of societal challenges and has moved toward mission-oriented innovation policies (Mazzucato, 2018). Wanzenböck et al. (2020) propose that mission-oriented policies are not a new thing, but since the limited success they have had, the approach has been discredited since the 1990s. Pot et al. (2022) have pointed out that NPM has focused more on short-term and output-oriented results. Considering the concerns about global warming and the belief that a strong government technology policy is part of the solution, the mission-oriented policy has reappeared in the academic discourse. However, Wanzenböck et al. (2020) see that the new mission-oriented innovation policy differs from the previous one by targeting the future needs of society.

Additionally, transition studies have recently focused more on policy processes in transition, and the interest in the studies is on using policy instrument mixes to facilitate (or hinder) transition (Köhler et al., 2019). The interest in mission-oriented innovation policy stems from focusing more on solving concrete problems in society (Wanzenböck et al., 2020). Wanzenböck et al. (2020) note that mission-oriented innovation policy is also related to the literature on transitions as the persistent nature of the problem requires fundamental changes in the current system. The social challenges that mission-oriented innovation policy aims to solve by engaging multiple actors in cooperation may need a societal transformation that requires changes in technologies, institutions, and attitudes. Mazzucato (2018) adds that missions cannot be achieved by a single technology or development path but require multiple solutions that are developed through co-creation. As noticed in the transition literature, optimizing the current system is insufficient and requires transition in the socio-technical system.

However, Wanzenböck et al. (2020) raise the fact that societal challenges can be very different in nature, and this has not been noted in the current literature on mission-oriented innovation policy. As the challenges are different in nature, the types of policies should also be targeted to address the needs of different problems. They see that technological solutions have been the primary focus of academia and policymakers as a means to solve societal problems. By doing so, problems are seen as solvable by developing new technologies, whereas the actual problem could be tackled, for example, by new regulations or behavioral changes. Nonetheless, Pot et al. (2022) have noted that there are tools and methods to facilitate long-term
decision-making, but they are not integrated into the public sector organizational practices. With this pitfall, public sector managers and policymakers do not have everyday tools to drive long-term missions. In addition, they note that the four-year election cycle challenges the adoption of a longer time horizon in public policymaking.

Wanzenböck et al. (2020) highlight in their article that mission-oriented innovation policy should recognize the wickedness of societal challenges and not try to provide a “one-size-fits-all approach.” They argue that “mission-oriented innovation policy should be viewed as process-oriented policy that provides directionality and aims at supporting the process towards convergent problem-solution constellations” (Wanzenböck et al., 2020, p. 475). They also note that mission-oriented innovation policy should be seen as “a directional policy that starts from the perspective of a societal problem and focuses on the formulation and implementation of a goal-oriented strategy by acknowledging the degree of wickedness of the underlying challenge, and the active role of policy in ensuring coordinated action and legitimacy of both problem and innovative solutions across multiple actors” (Wanzenböck et al., 2020, p. 476).

Wanzenböck et al. (2020) have conceptualized societal challenges according to their problem and solution structure. Societal problems have a high leaning toward wickedness, meaning that they are complex, unpredictable, and in many cases immune to linear and rational methods of problem-solving. The degree of wickedness is a combination of three different dimensions. Contestation comes into exist from divergent claims, values, and framings or conflicts. Complexity is caused by the multidimensional nature of societal problems, and tackling it requires cooperation between multiple actors, domains, and governance levels. Uncertainty is an endogenous aspect of societal problems and refers to the limited availability of evidence between causes and consequences. Naturally, the higher the contestation, complexity, and uncertainty the societal problem has, the more difficult it is to derive a legitimate and clear mission for policy actions. It should also be noted that, even if the problem definition is clear, the solutions could be subject to different degrees of contestation, complexity, and uncertainty. Therefore, the problem and the solution should also be examined from different views. As on the problem side, the solution is more divergent when the contestation, complexity, and uncertainty are high. Wanzenböck et al. (2020) argue that a mission-oriented innovation policy should identify a societal challenge and translate it into a clear problem formulation. The
solutions are often beyond the traditional science-and technology-based strategies and require a search for different types of solutions (technological and institutional). Contextualizing the social challenges from the problem and solution side, it is possible to escape the danger of trying to develop a one-size-fits-all approach.

Wanzenböck et al. (2020) add that the role of innovation policy has also changed from neutral to shaping the direction of innovation activities. They also see that the innovation policy in Europe should move from a large number of small exploratory projects to a limited number of large-scale research and innovation initiatives. In addition, innovation policies require new and more decentralized governance models and broader societal acceptance. Therefore, the involvement of groups, such as citizens, NGOs, and professionals, is needed.

### 3.5.4.2 Transition governance

Köhler et al. (2019) have noted that, in recent years, research on the governance of transitions has grown. This has focused on forward-looking analyses, developing studies of policies in transitions, and the role of experiments and transition intermediaries in connecting different actors. It is interesting that they also highlight that international organizations, such as the OECD and the European Environment Agency, have shown interest in using applications from transition studies. This has challenged transition scholars to focus on system innovation in the making and develop forward-looking analyses and policy-relevant scenarios and toolboxes. They see that, to govern transition processes, transition scholars need to emphasize the role of instruments that have been newly developed in transition studies. Moreover, the focus in research should not only be on describing transitions but on initiating and catalyzing them.

Pel et al. (2020) studied the governance of transition, especially how transition as evolutionary processes with different future pathways can be studied. Additionally, Rogge et al. (2020) have studied the development of qualitative and quantitative sociotechnical scenarios for future sociotechnical pathways and storylines. Pel et al. (2020) see that instruments boosting transition should consider more why some innovation should have policy support, what should be transformed, why, and by and for whom. Their findings show that directionality-conscious transition governance should target wide sociotechnical and institutional innovations, not just isolated technologies. In addition, synchronizing governance actions is needed to
keep ongoing system innovation on a desirable course. Rogge et al. (2020) note that it has been acknowledged in recent sustainability transition research that achieving transitions requires the use of broader policy mixes. These policy mixes should support the niches developing innovations, but policies should also be targeted toward the “creative destruction” of the regime. They add that implementing policies supporting the destructive side of transition is not easy due to the vested interests of powerful stakeholders. However, they see that policy instruments can be used to encourage public acceptance and to establish shared visions of the future.

3.5.4.3 Experimentation as a governance approach

In addition, Köhler et al. (2019) and Rogge et al. (2020) note that experimentation as a governance approach has gained a lot of attention, especially in the SNM literature. This is understandable because innovation and niches are at the core of the transition literature. Sengers et al. (2019) carried out a systematic literature review on how experiments and experimentation have been studied in the field of (sustainable) transition studies. They note that experimentation is understood as a fundamental agent of change in the transition field and thus distinguishes it from other social change and policy theories. In their study, they found that experiments in transition studies can be categorized into five different conceptualizations: niche experiment, bounded socio-technical experiment, grassroots experiment, transition experiment, and sustainability experiment. These conceptualizations have differences between their theoretical foundations (even though they are based on SNM, TM, and MLP), analytical emphasis, main actors, and normative orientation of how goals should be achieved. Even though there are some differences in the characteristics of experimentation, the conceptualizations also have a lot in common. They all see that experimentation is an initiative in the context of system innovation and that experiments are practice-based, challenge-led, and inclusive and include social learning. Therefore, they suggest a definition of experimentation for sustainable transition as “an inclusive, practice-based and challenge-led initiative designed to promote system innovation through social learning under conditions of uncertainty and ambiguity” (Sengers et al., 2019, p. 161).

Sengers et al. (2019) have outlined some avenues for further studies on experimentation. In their view, the tensions and controversies in the actor network should be studied further, as well as identifying success and failure factors of experiments. In addition, conceptualizing multiple experimental pathways is needed.
An interesting notion is the need to better understand the geography of experiments, meaning that research should focus on identifying local contexts that are crucial for the embedding and implementation. This way, we can also understand how experiments can diffuse across scales. This is linked to the discussion of spatial dimensions mentioned earlier and the notion of focusing more on embedding innovations. They also make an interesting notion that the current transition literature on experimentation focuses on transforming a specific societal function or sector but does not focus on the transformation of the welfare state. This is something that can be addressed in future studies.

A more recent paper by Sengers et al. (2020) studied “beyond” the experiment. Their illustration of three elements that lie behind experiments is interesting because it shows the elements needed for the experiment to create change. First, there is the place of the experiment, meaning the spatial dimension (is the experiment local or expanded?). The second element is time and whether the experiment is temporary or sustained. The third is the structuration of the experiment and whether this is context specific or generic. In order for an experiment to create change, it needs to become “more” in the temporal, spatial, and structural sense. However, they have also identified obstacles or tension preventing experiments from creating change. Experiments are carried out by local actors, and the objectives are created based on local needs. For the experiment to be embedded in wider structures, it needs different actor coalitions and broader objectives. Sengers et al. (2020) see that experiments need to be designed and implemented to support the embedding in wider structures. Additionally, there is a need to develop pathways supporting intermediation infrastructure and to understand the process of embedding experiments as an iterative process between the system and the experiment.

### 3.5.4.4 Long-term policy

Sengers et al. (2019) note that, even though experiments are the seed of change, they have the problem of being an isolated event that will fade away without any effect on the existing regime. Experiments are definitely needed, but the criticisms they have faced have also put forward the need for long-term policy. Voß et al. (2009) note that long-term policy has a long history, but it has been unpopular in recent decades due to its classic approach to fixed planning and bureaucracy. However, the second generation of long-term policy has learned from previous failures and highlights coevolutionary understanding, participation, and learning.
Voß et al. (2009) have studied the long-term policy perspective. They see that the realization of long-term policy should be flexible and adaptive, and its goals should extend beyond electoral cycles or even beyond a generation of civil servants. Long-term policies need to innovate a new socio-technical system and not just optimize and correct the existing system. Therefore, policies and policy mixes need to induce and guide innovations that are capable of replacing established ways of doing things. At the same time, they need to execute long-term guidance but also be sensitive to bottom-up innovation and deal with uncertainty and spontaneous development paths. Innovations also need to be systemic in nature due to the complexity of socio-technical systems. These requirements, noted by Voß et al. (2009), need to be counted on when using reflexive long-term policy designs. In their work, Voß et al. (2009) also point out that TM can offer tools to deal with these issues.

In addition, Voß et al. (2009) raise the issue of the problem of moving away from existing governance practices toward new reflexive long-term policy practices. The still prevailing paradigms of positivist policymaking and the NPM approach make it difficult to utilize long-term policy designs. A new framework of long-term policy may easily be rejected by existing policy processes and therefore undermine transition initiatives and reduce the motivation of individual actors to participate in learning processes. Moreover, Voß et al. (2009) see that long-term policy reforms can take the form of “layering” on the top or earlier paradigms that are dominant. An interesting question is how these policies create transitions. Voß et al. (2009) highlight that, for TM to create a transition and overcome incremental shortcomings, it needs to keep in mind the radical goal it is pursuing.

### 3.5.5 Toward co-creation of services with the help of transition studies

This chapter has provided a summary of the discussions in the field of transition studies. It has introduced MLP as an overall theoretical framework to understand socio-technical change. MLP, together with TM and SNM, can offer an understanding of the needed systemic changes toward transition and especially TM and SNM can also be used as a policy instrument to promote transition in a system. The chapter has also introduced the future research interests and needs in transition studies that have been pointed out by transition scholars. These studies have noted that transition studies need to offer frameworks, methods, and tools to policymakers to deal with grand challenges. There is an urgent need to utilize these concepts to promote transition in various fields, such as social and healthcare. The systemic view
of change and ways of promoting transition can be seen to generate an understanding of how to change the social and healthcare system toward co-creation. However, more research is needed on the systemic changes that are required and the use of transition studies in the social and healthcare sector.

As stated in the introduction, this dissertation seeks to answer the questions of whether co-creation offers possibilities to reform the current social and healthcare system in Finland and how the transition studied can help understand and develop these services. The next chapter introduces the empirical context of the dissertation, together with the four research articles. The first two articles study the introduction of a service model, aiming to introduce a new way of co-creating services. The third article focuses on promoting systemic change in an organization, and the fourth article aims to create methods and tools to tackle the problem of discontinuity in policy actions.
4 METHODOLOGY AND EMPIRICAL CONTEXT

The literature on public policymaking, particularly in service management literature, has provided the lens through which public services are understood and how they have been studied. On the other hand, a theoretical discussion on transition studies has demonstrated how systemic changes are needed to promote transition and how the change can be understood and promoted.

Based on the presented literature on public policymaking, it is justified to claim that there is a need to promote systemic changes toward the use of co-creation. Public policymaking has not been able to offer a framework to study or promote systemic change in the use of co-creation. There is a need to better understand how socio-technical changes occur in a complex system. Transition studies can offer frameworks to study and promote socio-technical change in the social and healthcare system. For transition studies, there has been an acknowledgement of the need to also integrate the policy views of how to better drive system transition. In addition, the role of users and understanding their role in transition processes require more research.

In the following, the methodological choices for this dissertation are presented, followed by the presentation of the empirical context. The four papers in this dissertation provide different viewpoints on the studied issue of developing and promoting co-created social and healthcare services in Finland.

4.1 The approach of the dissertation

Methodological choices for this dissertation are presented in a “research onion” (Figure 5) and are discussed in more detail in the following sections. The dissertation follows a socio-constructivist approach where knowledge is seen to be socially constructed in a complex interaction between people (e.g., Patton, 2002; Schwandt, 2003). Epistemologically, it follows abductive reasoning and uses a triangulation of approaches. The dissertation is mostly qualitative but has some quantitative elements.
that are presented in Paper 4. A case study approach is the main research strategy, but this is enhanced by using action research. The data were acquired from semi-structured interviews, workshops, documents, and economic decision modeling.

![Research Onion Diagram]

**Figure 5.** A research onion (modified from Saunders et al., 2016) diagram of this research.

### 4.1.1 Ontology

There are multiple paradigms and perspectives on how to conceptualize the world in which we are living. There is no ultimate truth, and it is in the minds of individuals as to how they perceive the world. Ontology refers to basic assumptions and beliefs about reality (Denzin & Lincoln, 2003, 2013; Guba & Lincoln, 1994; Saunders et al., 2016). In this, it explores the type of reality that exists, what reality looks like, what the entities that exist within reality are, and how these entities interact (Tronvoll et
Järvensivu and Törnroos (2010) have described a positivist (or realist) view as seeing reality as independent of our knowledge. On the other hand, a relativist view sees that there are only subjective realities.

A paradigmatic foundation of this dissertation is best described in the socio-constructivist approach. According to Schwandt (2003), constructivism means that we do not find or discover knowledge so much as we construct it. Social constructivism emphasizes capturing multiple perspectives (Patton, 2002). Concepts, models, and schemes are made to make sense of experiences that are constructed against historical and sociocultural backdrops (Schwandt, 2003). It emphasizes the socially constructed nature of reality. However, the paradigm sees that we construct knowledge about reality and do not construct reality itself (Patton, 2002). In this respect, the socio-constructivist paradigm acknowledges that a physical world exists, but the meaning comes from social interaction.

This dissertation focuses on public policymaking and renewing the social and healthcare sectors through the co-creation of services, where PSL (based on SDL) is at the core. In addition, transition research and the theoretical frameworks of MLP, TM, and SNM are studied to provide insight into how public policymaking can utilize these frameworks to promote the use of co-creation in social and healthcare services. The following section will briefly introduce how these theoretical frameworks have approached the ontological paradigms and used the paradigm of socio-constructionism or social theories and thus ground the choices that have been made for this dissertation.

Tronvoll et al. (2011) report that service research has its roots in a positivistic paradigm. However, the emergence of SDL and the multidisciplinary focus on service research have highlighted the need for paradigmatic discussion. They have also noted that service research has mainly focused on practical issues with managerial relevance, and there has been little discussion on the ontological and epistemological issues or paradigm assumptions. In addition, they claim in their research that service research should expand beyond the positivist paradigm to better understand value co-creation and service systems.

Edvardsson et al. (2011) have argued that social construction theories are inherently compatible with ideas in SDL. They have used social construction approaches to develop a framework for understanding how the concept of value co-creation is affected by recognizing that it is embedded in social systems where the value is
socially constructed. Edvardsson and Tronvoll (2013) also suggest a need to discuss service innovation in a social constructivist way to better understand the guiding principles that enable users to co-create value. They also note that social theories see value co-creation and innovation as taking place within the frame of social systems.

Service innovations, which are the core of transforming the public sector, are complex, often incremental, and informal processes where human resources and collaboration are important (Edvardsson & Tronvoll, 2013). Edvardsson et al. (2011) have emphasized that value is co-created in a social context because service systems are embedded in the larger social context. In addition, value needs to be understood as a part of social context. Edvardsson and Tronvoll (2013) reveal that, to understand and enhance service innovation, there is a need to understand the service.

Even though public policy research (more precisely, service research) and transition studies have evolved from different ontological paths, they both realize the possibilities of studying phenomena from a socio-constructivist approach. As research in services has focused more on value co-creation (Saarijärvi et al., 2017), the ontological perspectives have moved toward paradigms that highlight the social aspects of constructing reality. The discussion in transition studies has evolved from different paths. Geels (2010) notes that, because socio-technical transitions are multidimensional phenomena, they can be studied from various angles by different disciplines and thus have different ontological views. However, he notes that MLP, which is at the core of transition studies, originates from the Twente school’s quasi-evolutionary theory (Rip, 1992; Rip & Kemp, 1998; Schot, 1992), which aimed to make previous research more sociological via crossovers with interpretivism and constructivism. The sociological aspect is highlighted in the name of the socio-technical system, where the focus is on the social aspects in the system. The system changes are called “socio-technical” because they entail not only new technologies but also changes in different social aspects such as markets, user practices, policy, and cultural meanings (Geels, 2004, 2010). Within TM, there are different starting points. For example, SNM is based on two theories of technological change: social constructivism and evolutionary economics (Verbong et al., 2008).

Zolfagharian et al. (2019) carried out a systematic review of how researchers in transition studies have understood and used the ontological aspects. They noted that transition research is an interdisciplinary field rooted in the tradition of system thinking. However, transition researchers have been drawing on insights from many
different areas, such as complex adaptive systems theory, governance, evolutionary economics, innovation studies, science and technology studies, history, and institutional theory. With this notion, they argue that transition studies have not sufficiently reflected the methodological challenges that arise with the use of different methodological starting points.

In their study, Zolfagharian et al. (2019) summarize that transition research has mostly focused on relativist, subjectivist, and deductive research that has suited the characteristics of heterogeneous, contingent, and multilevel nature of socio-technical transitions. However, they point out that there are circumstances where realist, objectivist, and inductive research that uses quantitative methods is needed. They draw an example of a study that involves the long-term consequences of a range of policy interventions that can be derived from simulation modeling. They see that the dominance of some methodologies and paradigms over others may limit the societal impact of transition research. For example, decision-making processes may be better aligned with research results expressed in quantitative ways than qualitative case study results. In addition, a combination of qualitative and quantitative research is seen as something that should be pursued. Mixing research strategies is not common in transition studies, although Zolfagharian et al. (2019) see that the use of mixed methods may, in some cases, address problems more comprehensively. Moreover, mixed research can also be conducted at the level of paradigms and theories.

4.1.2 Epistemology

Epistemology discusses the nature and origin of knowledge and asks the question of how we know that we know (Saunders et al., 2016; Tronvoll et al., 2011) or how we know the world (Denzin & Lincoln, 2003, 2013). It addresses the question of how we perceive the world and how we communicate it to others. A realistic view sees objective observations of reality as possible, whereas the relativist view understands observations as always bounded by our subjective meanings of the world (Järvensivu & Törnroos, 2010).

This dissertation has followed abductive reasoning (Dubois & Gadde, 2014; Dubois & Gibbert, 2010; Järvensivu & Törnroos, 2010). Bryman and Bell (2015) explain abductive reasoning as an approach that starts with a puzzle and then seeks to explain it. Puzzles can arise from empirical phenomena for which existing theory cannot account. Abductive reasoning seeks to identify conditions that would make the
phenomenon less puzzling. This requires back-and-forth engagement with the social world (as an empirical source of theoretical ideas) and the literature (Dubois & Gibbert, 2010; Saunders et al., 2016). It also highlights that understanding comes from the continuous dialogue between the data and the researcher’s preunderstanding and stresses cognitive reasoning in theory building. Abduction is considered to be suitable, especially in case studies.

Figure 6 presents the epistemological choices made in the four papers presented in this dissertation. Järvensivu and Törnroos (2010) argue that a research process can follow different levels of abduction. In some phases, they can be more inductive or deductive, but the whole process can be seen to be abductive in general. Papers 1 and 2 are mostly abductive but have features of inductive reasoning. Paper 3 is strongly abductive. Paper 4 is mostly abductive but also has deductive features.
Figure 6. Abductive reasoning in the dissertation (modified from Järvensivu & Törnroos, 2010).
Social constructivism claims that reality needs to be interpreted. A researcher builds this understanding together with the individuals participating in the study. Charmaz (2014) has pointed out that a theory that has been created through research is always an interpretation constructed together with the researcher and the individuals studied in the research. The interaction starts with the researcher’s view of the world and goes back and forth with the research data and the existing theory. In this view, social constructivism naturally relies on abductive reasoning.

4.1.3 Research approach

The research approach in this dissertation is mainly qualitative, which is also in line with social constructivism, emphasizing the use of qualitative approaches. In addition to the qualitative approaches, the dissertation has a quantitative element (in Paper 4) that focuses on policy support. Qualitative research (Denzin & Lincoln, 2003, 2013; Patton, 2002) can be defined as a set of practices that make the world visible. A qualitative researcher studies things in their natural setting, aiming to make sense of phenomena in terms of the meaning people bring to them. They can use different practices to better understand the research phenomena, such as interviews, memos, field notes, and conversations. Each practice makes the world visible in a different way, and, thus, using multiple practices can give a different view of the studied issue.

Because this dissertation uses qualitative and quantitative research, the research approach can be said to be a triangulation of approaches. In addition, the triangulation of approaches is used in the research strategy of this dissertation (by using case studies and action research) and by combining theories from public policy research together with transition studies. Triangulation of research has been criticized, and there have been claims that qualitative and quantitative methods, for example, should not be combined because of the differences between their underlying paradigm assumptions. However, Denzin and Lincoln (2013) note that the attitude toward triangulation of methods has changed during the past few decades, and it is now seen as a way to study certain phenomena.
In triangulation (Coffey & Atkinson, 1996; Patton, 2002; Yin, 1999, 2018), multiple data sources are used to study the same setting. The triangulation of approaches can be seen to generate benefits from different viewpoints. A simple idea is that, through the triangulation of approaches, techniques, and data, it is possible to produce a more comprehensive picture of the social world and the phenomenon studied. It has commonly been understood that, by using multiple theories, methods, and data sources, it is possible to overcome the intrinsic biases coming from using only a single method or theory.

However, it should be noted that the goal is not to demonstrate that the approaches yield the same results (e.g., Patton, 2002; Yin, 2018). As Coffey and Atkinson (1996) have pointed out, the aim of using a triangulation of approaches is not to generate a more realistic picture of the world because the world can be seen to be socially constructed. Continuing from this notion, this dissertation does not aim to produce a comprehensive picture of the system. Triangulation is used in this dissertation to answer the question, “Does co-creation offer possibilities to reform the public social and healthcare system in Finland?” As the system is seen as complex, the study also aims to understand it from different viewpoints. By using different methods, it is possible to have different versions of the social world and thus to understand it better.

There is also the aim of answering the question, “How can transition studies help to understand and develop public social and healthcare services?” Coffey and Atkinson (1996) have noted that there are different methods because the questions that are asked are different. However, they have criticized the use of triangulation since they see that the results derived from different approaches cannot be summed up. The second question could have been studied using only a case study approach. However, the recent literature has pointed out the need for promoting transition and not only describing the socio-technical change. To study and develop possibilities to enhance systemic change toward co-creation, action research provided methods to answer this need. However, it should be noted that the results from the different studies in this dissertation should not be summed up as such, but they offer different interpretations of the studied phenomenon and thus help understand how to develop services to meet the systemic challenges.
4.1.4 Research strategy

Case study and action research methods were applied in the empirical part of this dissertation. The method applied in Papers 1 and 2 was a case study where the development of a new service model was studied. Paper 3 had two cases that were studied using action research. The cases focused on developing services, and the study introduced a method promoting a systemic understanding of change and learning. The use of gamification was selected in this study because it provided an interesting new type of method to promote learning. Paper 4 was based on a case study method focusing on preventing T2D. The growing number of T2D patients creates pressure for the sustainability of the healthcare system. Preventative actions, such as healthy lifestyles, have proven to be effective in reducing T2D (Knowler et al., 2021). However, embedding these actions in healthcare organizations has been difficult (e.g., Herman, 2015), which created an interesting case to study. The paper included a quantitative element of developing scenarios and an online tool for policymakers.

For the first research question, “Does co-creation offer possibilities to reform public social and healthcare services in Finland?” a case study approach can give comprehensive, systematic, and in-depth information on the studied phenomenon (e.g., Yin, 1999, 2018). It aligns with the ontological foundation of socio-constructivism in this dissertation (Denzin & Lincoln, 2013). Yin (2018) and Dubois and Gibbert (2010) see case study approaches as an empirical method investigating a phenomenon (or case) within its real-world context, where the boundaries between a phenomenon and context may not be clear. Yin (1999) has also noted that the case study approach is well suited to health system research where the complexity of the studied phenomenon is high. Using case studies, it is possible to capture the dynamics of a phenomenon and provide a multidimensional view of the studied situation (Järvensivu & Törnroos, 2010). Case studies rely on interviews, observations, and document analysis (Denzin & Lincoln, 2013; Dubois & Gibbert, 2010). Case studies can be layered on top of each other to create an understanding of the studied phenomenon (Patton, 2002).

Case studies can also be used together with other methods as a part of a mixed-method study (or triangulation) (Yin, 2018). The second question, “How can transition studies help to understand and develop public social and healthcare services?” could have been studied using just a case study method, as mentioned
before. However, the question of developing public social and healthcare services guided the research toward also using the action research method to gain an understanding of the development methods.

Denzin and Lincoln (2003) have defined action research as “research in which the validity and value of research results are tested through collaborative insider-professional researcher knowledge generation and application processes in projects of social change that aim to increase fairness, wellness, and self-determination.” Denzin and Lincoln (2003) also state that action research is a process where stakeholders from a community or organization collaborate with the researcher to define objectives and research questions, learn research skills, pool knowledge, conduct the research, interpret research results, and apply the lessons learned to produce societal change. Action research aims to generate knowledge and action to support societal change (Patton, 2002). Gergen and Gergen (2008) see that social constructionist ideas have a dialogic relationship with action research. They both emphasize processes of collaboration and “making the world.” Constructionism recognizes the community as a source of intelligibility, and action research is fundamentally nested in working with people and seeking interdependences. They also see that an emphasis on collaboration brings forth synergy between constructionism and action research.

4.1.5 Data acquisition and analysis

The data acquisition and analysis for this dissertation were carried out in three different projects. For Papers 1 and 2, the research was carried out in the Revolution of the Service Economy – Human Being at the Core of Digitalization (2015–2017) (KUMOUS) project. The project consortium consisted of the Finnish Institute of Occupational Health (FIOH), the Technical Research Centre of Finland (VTT), Lappeenranta University of Technology (LUT), and the University of Helsinki. The project was funded by Business Finland and its participating partners. The project focused on the digital service innovations of the Finnish public sector and the third sector in the contexts of early childhood education, social and healthcare, housing for older people, and the everyday life of young people.

The Management of Complex Integrated Care Systems through Simulation and Gamification (MOSAIC) project provided the platform for the research work of Paper 3. This project was carried out between 2014 and 2016 and was funded by
Business Finland, the Technical Research Centre of Finland (VTT), and Pirkanmaa and Vasa Hospital Districts. The aim was to use simulation techniques, gamification, and ideas of complexity to support integrated care system improvement. Paper 4 was produced in the Stop Diabetes—Knowledge-Based Solutions (2016–2019) (STOPDIA) project funded by the Finnish Strategic Research Council. The project aimed to empower individuals at increased risk of T2D to adopt and maintain a healthy lifestyle and to achieve this by combining an individual-level intervention with changes in the living environment to support healthy behaviors and by identifying societal barriers and facilitators to the implementation. In addition, it studied how a healthy lifestyle can be supported by individual-level solutions utilizing digitalization and by altering the living environment to make healthy choices preferable and easier. The project was conducted in cooperation with the Technical Research Centre of Finland (VTT), the University of Eastern Finland, and the Finnish Institute of Health and Welfare.

Semi-structured interviews, focus-group interviews, documents, and workshops were utilized to collect the data. In addition, Paper 4 utilized health economic decision modeling, where the data collection and analysis followed quantitative data collection and analysis. The main source of data in this dissertation was collected through semi-structured interviews (Papers 1–4). The total number of interviews was 78, which were conducted in three research projects. All interviews were recorded and transcribed. Bryman and Bell (2003) report that semi-structured interviews are guided by specific topics that are intended to be covered in the interview. The interview process is flexible, aiming to explain and understand events, patterns, and forms of behavior. The interviews are presented in Table 5.
Table 5. Interviews carried out for the dissertation

<table>
<thead>
<tr>
<th>Interviews</th>
<th>Number of interviewees</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paper 1 (round 1), KUMOUS project, total</td>
<td>23</td>
<td>October 2015–February 2016</td>
</tr>
<tr>
<td>Local managers</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Local professionals</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 1</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Group 2</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Group 3</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Paper 2 (round 2), KUMOUS project, total</td>
<td>7</td>
<td>November 2016–February 2017</td>
</tr>
<tr>
<td>Local managers</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>State representatives</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Paper 3, MOSAIC project, total</td>
<td>25</td>
<td>Spring 2014</td>
</tr>
<tr>
<td>Case 1</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Case 2</td>
<td>16</td>
<td></td>
</tr>
<tr>
<td>Paper 4, STOPDIA project, total</td>
<td>23</td>
<td>May–September 2017</td>
</tr>
<tr>
<td>Users</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Providers</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Societal actors</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Purchasers/refiners</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>78</td>
<td></td>
</tr>
</tbody>
</table>

Paper 1 applied snowball sampling in the search for the interviewees. Geddes et al. (2018) define snowball sampling as a method where one contact helps recruit another contact, who in turn can introduce another one. It involves deep social networking that usually starts with a few contacts and then uses these to establish links with other interviewees, thus building up sampling momentum and the sample size. Five interviews with local managers were carried out between October 2015 and February 2016. In addition, three focus-group interviews with local professionals were carried out during that time. In focus-group interviews, the interviewees often have similar backgrounds (Patton, 2002). Bryman and Bell (2003) and Patton (2002) reveal that focus-group interviews aim at revealing how the participants view the issue with which they are confronted. In the interviews, there are fairly tightly defined topics, and the emphasis is on the joint construction of meaning. People can consider their views in the context of the views of others and thus comment on their original responses. A series of different focus-group interviews can offer a variety of perspectives and confirm the findings of different patterns. Paper 2 utilized interviews that were carried out earlier and reported in Paper 1. The research
processes continued with a second round of interviews with three local managers and four state representatives. Snowball sampling was also used in this round of interviews. Altogether, 30 interviews were utilized for the analyses in Paper 2.

Paper 3 had two cases with a total of 25 interviews. For case one, nine interviews were carried out, and for case two, there were 16 interviews. The interviewees represented healthcare experts who were participating in a service renewal project. Before the interviews in Paper 4, a stakeholder analysis was conducted to identify the actors most relevant to the purpose of the study. The stakeholder analysis utilized a “diamond model” (e.g., Kivisaari et al., 2013, see Section 3.3.5) that categorizes stakeholders into four groups according to their different relations to health services: providers, users, societal actors, and purchasers/refiners. Altogether, 23 interviews were carried out with 10 users, 6 providers, 4 societal actors, and 3 purchasers/refiners.

The data from the case studies were analyzed using a content analysis. Patton (2002) has stated that content analysis refers to efforts of making sense of qualitative data by identifying core consistencies and meanings. In this way, it is also possible to construct knowledge about reality as it is understood in the socio-constructivist paradigm (Patton, 2002). Usually, the core meanings found in content analysis are called patterns or themes. In Papers 1 and 2, the analysis and interpretation of the data were conducted in a dialog between theory and empirical findings. Papers 1 and 2 did not use any computer-assisted coding tools. Several rounds of analysis were carried out to derive meanings from the data and to reduce the amount of data (Huberman & Miles, 1994). While reading the interviews and the documentary material, the most common and typical themes were revealed, classified, and structured. In this way, a holistic, systematic, and thorough understanding of the research topic arose. The empirical observations were linked to the theoretical views of the paper. In Paper 1, the nature of welfare services, multiprofessional collaboration, and the participation of users in service delivery were examined, and in Paper 2, the experimental approach to innovation and specific issues of the public sector were studied.

Supplementary material was also used in Papers 1 and 2. The first source of this material was official documents. They included strategy documents on the nationwide initiative for local experiments and descriptions and implementation plans provided by the city. The second source of supplementary material was studies
that were carried out earlier on in the development of social services in the city suburbs and on the implementation of integrated primary care in the city’s health centers (Määttä et al., 2014).

For analyzing the research results in Papers 3 and 4, a qualitative data analysis software program was used. It should be noted that computer and software tools assist in analysis, but they do not really analyze qualitative data. They can speed up the process, for example, by locating coded themes and grouping data into categories (Bryman & Bell, 2003). However, the researcher must decide how to frame the study and how to tell it (Coffey & Atkinson, 1996; Patton, 2002). Paper 3 used QSR NVivo qualitative data analysis software. The analysis was carried out by performing a thematic analysis of the relevant research topics, thus identifying the common responses of the interviewees.

Paper 4 utilized the coding tool Atlas.ti. to classify and restructure the data into themes. In the first stage of the analysis, five key transition themes were identified. Digitalization was at this stage identified as a cross-cutting theme, becoming a central element to all of the major themes, and thus selected as a focus for the research reported in the paper. In the second phase of the analysis, interview data relating to digitalization were analyzed closely to identify potential facilitators, barriers, and future visions of digital tools in T2D prevention. For this round of the analysis, the Atlas.ti tool was not used, but several iterative rounds of content analysis were conducted to derive meanings and notable findings from the data. While going through the selected data, the most typical themes were revealed and classified.

Workshops are a way of conducting action research and are at the core of the research methods used in Paper 3. Workshops can be seen as an arrangement whereby a group of people learn, acquire new knowledge, perform creative problem-solving, or innovate in relation to a domain-specific issue (Ørngreen & Levinsen, 2017). Storvang et al. (2018) note that workshops are increasingly being used in various fields of research as a qualitative research method. During workshops, researchers can work with the participant to gather data about the participants and the research topic under co-creation. They also see workshops as a set of interactions where the current situation can be discussed and how the situation could be changed through generative design tools. In addition, workshops can validate data collected through interviews before the workshops. The use of workshops has been linked to the ideas of socio-constructivism (Ørngreen & Levinsen, 2017) and action research.
(Storvang et al., 2018) in research on policymaking, societal challenges, technology, organizational change, innovation, and design, for example. As a research methodology, workshops aim to produce reliable and valid data regarding forward-oriented processes, such as organizational change and design (Ørngreen & Levinsen, 2017).

Paper 3 presents two workshops in the case organizations, and its aim was to create dialogue and cooperation and to see familiar situations from another perspective to promote change processes. The interviews produced information as the basis for the planning of the workshops. Between the interviews and workshops, the group of researchers, together with representatives of the two case organizations, carried out the analysis and development work in several sessions. Similar gamified role-switching workshops were modified to respond to the content needs of the different cases. The Octalysis framework (Chou, 2015) was used to identify the key development needs and the conception of relevant “player types.” The gamification elements for these needs were then chosen and consisted of role switching, storytelling, and some visual elements, such as playing board and role cards with role figures.

In the first case, 10 healthcare experts from a pilot ward, other wards, pharmacists, and project development experts participated in a workshop. The participants represented all key positions and professions involved in implementation. In the second case, the participants represented nine key actors related to the clinical pathway. The workshops aimed to promote a change in practices as well as to obtain feedback about the gamified role-switching method. In addition, the session aimed to encourage participants to discuss their opinions more freely and to help the change process by making participants look at the everyday situation from another perspective. Another aim was to create dialogue among participants about elements of the needed solutions. Solving all the identified problems was not the aim of the workshops; rather, the aim was to identify and acknowledge different perspectives as the basis of learning to collaborate.

The gamified role-switching method included producing a story of a patient’s care history by the participants in collaboration in groups of 2–4 healthcare professionals. The story was based on a maximum of 10 events, which were chosen by the participants. After that, participants then randomly picked one card that represented one of the related professions (e.g., pharmacist, patient, doctor, or nurse). The
participants then explored each event from the perspective of the given profession’s role. Questions in the profession’s role cards guided the work. The guiding questions were about what the represented professional would do in a new situation (when a planned new way of working was expected to be used), what the obstacles were to acting in a new way, and what the benefits of this new way were. Answering these questions personally and the collaborative processing of the answers in a group aimed to reveal gaps, inconsistencies, and deficiencies in the plans; to build a shared understanding of the overall process and each actor’s roles, preferences, and duties; and to induce solutions to identified problems. Feedback was collected from the participants via a questionnaire to evaluate the workshops and the gamified role switching method. All participants returned either fully or partly filled-out forms.

In addition to the interviews, Paper 4 also utilized health economic decision modeling to develop scenarios of the expected economic outcomes of a digitally supported prevention program in different risk-based target subpopulations. The aim was to quantitatively demonstrate the expected economic outcomes of a hypothetical national digitally supported prevention program leading to a lower incidence of T2D during the next 10-year time horizon in different target populations.

The development of the health economic decision model included several phases. The modeling process was started by defining the parts of reality in the case of T2D prevention in the Finnish adult population aged 45–75 years, where the incidence of T2D is the most typical. The focus was on the modeling of the incidence of T2D based on its known risk factors and how the modification of this underlying risk could affect the annual incidence of T2D at the target population level. Next, a simple discrete state transition model with three health states (i.e., no T2D, T2D, and death) was developed to model population transitions between the defined health states in the model. The models require evidence to inform their parameters. In this case, the age- and sex-specific proportions of the Finnish adult population at moderately or high risk of T2D were derived from the national FINRISK follow-up data by applying the FINDRISC score, which predicts 10-year risk of developing T2D based on sociodemographic, behavioral, and anthropometric factors. Additional direct (i.e., due to healthcare use) and productivity (i.e., due to work absenteeism and permanent work disability) costs associated with T2D were included, as well as changes in risk of all-cause mortality due to T2D. The developed scenarios focused on the use of digital tools. The developed model was published as
a web-based online tool with automatic reporting to allow different stakeholders from various organizations to build their own projections and manipulate model assumptions related to a level of baseline risk in a target population, for example, or an applied perspective of analysis (i.e., a healthcare payer vs. societal perspective), as well as change parameter values (e.g., a size of the target population, a cost of the prevention program, etc.) as needed. The PDF report that the users received from using the tool included the calculations of potential savings and the vision pathway with identified themes from the interviews. The transition-focused storylines of each of the themes gave users information about the barriers and facilitators of the changes needed in the healthcare system.
This chapter summarizes the results from the four papers included in this dissertation. The papers approach the main research questions from different viewpoints. The papers study the paradigmatic change in the public sector toward the use of co-creation of services and transition methods that can help understand and promote the change. The papers present a complex social and healthcare system where the use of co-creation of services is difficult to implement. The papers present elements that have prevented the potential of co-creation in services and introduce methods from transition studies that can help promote change and visualize the needed changes in different levels of society.

Table 6 presents a summary of the papers’ aims, research questions, data and approaches, and the contribution to this dissertation. A more thorough introduction of the papers then follows.
Table 6. Summary of the papers

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>“Child and family services in the digital era. New opportunities for multi-professional collaboration and the empowerment of users”</td>
<td>“Innovation by experimenting in public services”</td>
<td>“Gamification as an enabler of mutual learning in complex health care systems”</td>
<td>“Digitalization as an engine for change? Building a vision pathway towards a sustainable healthcare system by using the MLP and health economic decision modelling”</td>
</tr>
<tr>
<td>Aim of the research</td>
<td>Focuses on experimental development in the public sector and the challenges linked to it.</td>
<td>The study examines the change process in organizations and whether change can be promoted through gamified solutions.</td>
<td>The study aims to create a vision pathway toward the prevention of T2D in Finland and to develop transition-focused storylines and forward-looking scenarios to demonstrate the needed changes and the expected national savings potential of T2D prevention in Finland.</td>
</tr>
<tr>
<td>Research questions</td>
<td>Research questions</td>
<td>Research questions</td>
<td>Research questions</td>
</tr>
<tr>
<td>1) What are the central issues in the integration of child and family services across sub-sectors and professions and how could digital tools promote this integration?</td>
<td>What are the reasons that caused the failure of the experimentation?</td>
<td>1) Can gamified solutions inspire learning and understanding of the viewpoints of other professions and understanding a systemic view of a healthcare organization?</td>
<td>How can systemic changes in public sector services in the context of the prevention of T2D be promoted in Finland?</td>
</tr>
<tr>
<td>2) What kinds of practices of user involvement and empowerment can be found in child and family services, and how could digital tools promote these practices?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2) Can gamified solutions activate dialogue and mutual learning?</td>
<td></td>
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</tbody>
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| Data | 5 interviews, 18 focus-group interviews (round 1) | 7 interviews (+ round 1 interviews) | 25 interviews and 2 workshops | 23 interviews and data for health economic scenarios |
| Approach of the study | Qualitative case study approach | Qualitative case study approach | Qualitative action research | Qualitative and quantitative action research |
| Contribution to the dissertation | Development concept suited the ideas of value co-creation, but the implementation did not succeed → lack of expertise to utilize co-creation of services at the local level | Discontinuity of public policies and changing policy agendas at the national level → mistrust at the local level | Gamified solution helped promote the double-loop learning required for systemic change | Presented a method of promoting and steering the change in public policymaking |
|  | Social services have special features (sensitive issues of users) that need to be acknowledged → need extra attention for user participation. | Lack of skills in innovation management at the local level | Gamified role-switching method inspired and gave means for the participants to enhance systemic understanding of their organization and to improve dialogue | Developed a tool that can help policymakers estimate the future impacts of their actions |
|  | To co-create services, professionals need sufficient resources and clear frames of development objectives | Lack of communication and learning structures in and between projects at the local and national level | To co-create services, professionals need sufficient resources and clear frames of development objectives | |
|  | | Lack of plans for accelerating the dissemination of good practices and common mechanisms and structures for them → wider | | |
| - Technological readiness in social services is not yet at a sufficient level to utilize the full potential of digitalization | - Price-driven digital solution was developed without user participation, was not user-friendly, and did not meet the requirements of professionals and service users | }
5.1 Paper 1: “Child and family services in the digital era. New opportunities for multi-professional collaboration and the empowerment of users”

The first paper discusses the issue of developing social services by integrating professionals and users through digital platforms. The paper focuses on cross-professional work and the involvement and empowerment of service users and frames these questions with a short analysis of the paradigmatic views concerning welfare services and the public sector.

The context of social services is an interesting sector to study since the combination of social and healthcare has become common in research and practice. However, the integration between sub-sectors in social care has gained little attention (Fisher & Eltnitsky, 2012) and is therefore the interest of this paper. More precisely, it focuses on the sub-area of social care for children and families. The integration of child and family services was highlighted over 20 years ago (Knitzer, 1997), but actual change has not been as notable as desired. The lack of coordinated multi-agency working in children’s services has been acknowledged (Percy-Smith, 2006; Sloper, 2004; Watson et al., 2006), but it is unclear to what extent these services have adopted the new practices of user involvement and empowerment. In addition, the utilization of digital tools in integrating social care and collaboration practices has not been explored to a great extent in the existing literature. Child and family services are a good example of services where there are, in many cases, multiple service needs requiring the participation of different experts and professionals. In addition, the services are linked to healthcare and schools. It thus creates a complex system in which there is a need for systemic innovations and change.

Public sector paradigms are presented in the paper, as they are tightly linked to the development of social services. The rise of co-creation of service value and co-production of concrete service processes are seen as important phenomena. However, the nature of professional work has caused notable disputes as the paradigms of the public sector have moved toward NPM and NPG. The paper analyzes these tensions in more detail to understand the framework conditions for cross-professional work in child and family services.
The paper notes in its literature review that the welfare service system is increasingly horizontally organized with cross-professional linkages. However, it contains sectoral “silos” and centrally managed systems with a top-down order. The professionals are expected to master the disciplinary content but also be creative lifelong learners with teamwork skills and implement various policy programs (Dent & Whitehead, 2002). The description of today’s professionals is different from the previous understanding of the role of professionals. These changes have created resistance among professionals due to the fear of weakening the basic values linked to professionalism (Evetts, 2011). The way professionalism has evolved over time has been of interest to academia (e.g., Tonkens et al., 2013). Specifically, working together across professional groups is one area where the adaptation of professionalism is needed. It is also linked to the co-creation of services with multiple possible outcomes (Fischer & Ferlie, 2013). Professionals need to learn how to share their knowledge and interpret it in different domains.

In addition to cross-professional work, empowerment can also be seen to be highlighted in the discussions on value co-creation (e.g., Vargo & Lusch, 2004), where value is created when the user uses the service. The empowerment of users or citizens has become a focus, and it has changed the view of service users as passive service recipients to co-creators of value. As the empowerment of users (or citizens) is seen to be a central goal, the use of digital tools has become a topical discourse (Mäkinen, 2006). Previous studies have indicated that digital tools can help empower users and place them “in the driver’s seat” in service production (Papastergiou, 2009; Samoocha et al., 2010; Webb et al., 2010). Studies have also shown that the potential of service co-production and co-creation has been understood in the public context (Bovaird, 2007). However, there have been difficulties utilizing digital tools to support user participation (Mäkinen, 2006), and the reasons behind these problems are only partially known.

The paper notes that more research is needed to reveal the linkages to inefficient policies, service cultures, and attitudes of professionals and users. In addition, it is still unclear what concrete changes are needed to support actual partnerships with users and the utilization of digital communication channels between users and professionals.

The empirical study analyzes an “experiment” in which a middle-sized Finnish city developed “an integrated model of well-being” for child and family services. The
development was part of a nationwide project that aimed at promoting local experiments as an alternative to centralized planning in the renewal of public services. The goal was to accelerate innovation in the public context and, in this way, to better answer the needs of citizens and empower them, enhance multi-actor collaboration, and reduce costs. The empirical data consist of semi-structured interviews, supplementary material, and workshops (see Section 4.1.5).

The integrated model of well-being was a complete life-cycle-based offering whose objective was to support multiprofessional work and reinforce the citizens’ ability to take responsibility for their well-being. The integration focused on the social care sector, but it also included preventive and therapeutic services in the neighboring sectors: day care, primary schools, and healthcare, including child healthcare. At the core of the model was the use of a digital platform as a mutual information and communication channel between citizens and different professionals. Another important cornerstone was a “service plan” to which both the citizens and the service providers committed themselves. It also aimed to empower citizens to participate in planning the services targeted for them. The development of integrated social services was not a completely new idea in the case city. Rather, the nationwide experiment provided a natural continuation of the work that had begun in 2008 but focused more on developing healthcare. A management team, including professionals from different sectors, was established to take care of the implementation of the new types of services. In addition, the views of grassroots employees were encouraged.

In the new experiment, integrated services were especially targeted at citizens who had multiple needs for social care and who were therefore in contact with different professionals from different sectors. A common service plan, which was a core idea in the experiment, aimed to collect together the various plans that were made for the customer, each of them answering a specific need. In order to ensure that the new holistic plan took into account all these needs, it was attempted to build close collaboration between different professionals and the users. An important element in the experiment was a digital platform, which was established to facilitate the distribution of information: the professionals and the customers had access to information. They could also update the service plan that was made in the electronic form and located on the platform.
The study revealed that the attitudes toward multiprofessional work were positive among professionals, and there were no significant prejudices toward the digitalization of services. The results indicate that the integrated model of well-being—including a common and digitalized service plan—had reasonable chances of enhancing collaboration between administrative and organizational silos, such as social care and healthcare, or social care and primary school. A common service plan was seen as a good and practical tool to support and accelerate collaboration and to lower barriers between various professionals. In addition, it was seen to make “soft” and tacit information more explicit, and the digitalized platform helps share information between professionals. In conclusion, it was evident that the integrated model could promote information flows between professionals and citizens, promote citizens’ target setting, improve the possibilities to answer the needs of citizens, support the creation of more customer-centric services, and clarify and structure the use of services, making them more manageable.

However, the results showed that the practical launch of the new practice was challenging, and the achievements were actually minor, leading to no permanent changes. Experiments are seen to correspond to modern society, but the success of experiments depends crucially on how they are carried out. In this case, the weak point was the lack of a bottom-up perspective. The initiation of the experiment followed a top-down practice that traditionally dominated the activities of public administration (Hartley, 2005).

The city had a long tradition of development activities and had a supportive culture toward collaboration with users. Development can thus be seen as following a policy that aims to develop services over a long-term period and is not just a single experiment. However, the study revealed that the continuous flow of experiments meant that the professionals did not know which experiments were important to them. This highlights the issue of change in professional work. Today, professionals are expected to master their substance profile and also be lifelong learners and participate in the development of services. However, in reality, the professionals are, in many cases, overloaded with the tasks of their primary substance work and have little space to participate in other tasks, even though they see them as important and interesting. TM suggests that there should be many experiments in which innovations are tested and developed. However, it should be ensured that all participants in the process have sufficient resources to carry out experiments.
Furthermore, the problem with the experiment was that it did not follow the ideas of co-creation. The managers who were responsible for the development did not follow the concept of co-creation and did not acquire sufficient commitment at the grassroots level. Professionals were invited to participate in the development process, but as mentioned earlier, they had only limited resources to participate. Moreover, the users were left out of the process. An interesting aspect was that this pointed out the specific structures and features of social services. The issues around the development process were, in many cases, sensitive, and the users were skeptical of using the innovation. If the users’ thoughts, fears, and ideas had been integrated into the development in the first place, it could have made a difference to the success of the experiment. This highlights the importance of organizing a balanced process between broad participation and small-scale pilots.

Regarding digitalization, the results revealed that the use of new technological tools is not as straightforward in ordinary work as it appears from the management point of view. The technological readiness (technical equipment, network capacity, and know-how) to use digitalized platforms is not yet at a sufficient level to fully utilize the potential. Professionals need support from management to understand and accept these platforms, which are often unfinished when they are taken into use.

5.2 Paper 2: “Innovation by Experimenting in Public Services”

The second paper continues by studying the same empirical case as Paper 1. The difficulties in establishing a new service model for child and family services interested us in the issue of experimenting in the public sector and the reasons why this experiment failed. Experimentation was seen in this paper as a pilot to test a policy program or other novel societal solution in a real-life context to have evidence on the effects, success factors, and sources of problems to create a working model. Experimental approaches have been suggested as a more successful innovation model than the traditional linear model as they take into account the conditions of modern society, such as continuous and rapid change (e.g., Eisenhardt & Tabrizi, 1995). They also provide a means for rapid learning, which is particularly important in innovation, where the results are not known beforehand (Lundvall, 2001). Experimentation can combine planning and implementation and thus avoid the problem of constructing a detailed plan for something that does not yet exist.
Experimentation also highlights the users’ role in innovation (e.g., Sundbo & Toivonen, 2011) as they are seen to co-create services.

The public sector has also discovered the benefits of experimental development. However, it has faced challenges due to a top-down perspective that has traditionally dominated the activities of the public sector, diminishing the involvement of users (Hartley, 2005). In addition to users, employees are seen to be important as they understand the organization and user needs. Moreover, dissemination of experiment results has been challenging, and broader applications are rare (Tummers et al., 2009).

Developing the public sector through experimentation has also been of interest to policymakers in Finland. In 2014, the Finnish Parliament accepted a law on experiment-based development in cities and municipalities for the years 2015–2016. The aims were to promote an experimental culture in Finnish municipalities, on the one hand, and to generate more efficient and effective services, on the other. More than 30 cities and municipalities participated in the project. Six topics were selected for experimentation (Tempo Economics, 2017), and an integrated model for well-being was selected for this study. This experiment was chosen because it represented a particularly ambitious effort to simultaneously promote employee-driven and user-based innovation practices. The experiment also highlighted the use of digital tools to empower citizens in a new sector: social services. The empirical study analyzed the same experiment, an integrated model of well-being for child and family services, as the first paper, but the focus was more on the nationwide perspective of experimental development. The empirical data are based on the same interviews, supplementary material, and workshops (see Section 4.1.5), but they have been enhanced by a second round of semi-structured interviews.

As shown in the results of the first paper, the city had experience of developing integrated services (in healthcare), and there was great promise in utilizing this knowledge in social services. However, there was a step back after the first year when the project manager of the experiment changed her job to another organization, and a new manager was not selected. In addition, there were problems in developing the digital platform, and it was delayed several times. In addition, when the platform was finished, it had many shortcomings. Development of the platform was very technology oriented, and the professionals and users were involved at a very late stage. In addition, sharing information about the development work and the purpose...
of the experiment did not reach the professionals, and only a few professionals participated in the development work. Because of the lack of clarity on the novel practice, there were problems getting customer families to use the platform. Due to these problems, the experiment was closed during the second year.

The results of this study are presented in Table 7. First, the paper points out the difficulties of understanding what experimental development actually means and implementing these ideas as development work. The study revealed that the city management and professionals did not understand the concept of experimenting. This points out that, even though there is goodwill among practitioners to develop services based on the ideas of co-creation, there might not be sufficient knowledge. Experimentation is not the same as an unplanned process, but the problem at hand should be carefully framed and contextualized. In this case, the project’s target (customer processes in the integrated model) was well specified, but otherwise the requirements of an experiment seemed unfamiliar. The applicability of experiment-based development in social care was not discussed, which was a severe shortcoming. Due to the sensitivity of customers’ problems, the use of the trial-and-error approach in this context should have been analyzed in detail. Now, it turned out to be too challenging. Lack of knowledge and poor organization of the project were intermingled with the real issues of customer situations.

In addition, a systematic process that would merge planning and implementation, according to the principles of experimentation, was missing in the case. The central role of learning, regarded as the main benefit of experiments in the literature (e.g., Engvall et al., 2001), was not emphasized. There was a contradiction between the basic idea of the integrated model of well-being and its implementation: the model highlighted the engagement of employees and service users, but the participation of grassroots professionals was not organized; consequently, the recruitment of users was passive.

Compared to the general challenges of innovation in the public sector, this paper points out that top-down practices are still strong. On the other hand, professionals were positive toward introducing new ways of interacting and had earlier experience with multiprofessional work. The change toward new types of professionalism was not a problem in this case, even though it has been regarded as another typical barrier to the renewal of the public sector. However, local leaders and managers were not capable of seizing this important opportunity. This case is an illustrative example of
a lack of skills in innovation management in the public sector. The focus in the development was on the idea phase; the implementation took place as a “voluntary” process, which made it secondary in everyday work.

The study also brought up experiences about the development of digitalization. A central element was a digital platform that aimed to support interactions between professionals and service users. However, the tailor-made, price-driven solution was not user-friendly, and the professionals did not know how the platform should be used or what it meant for their daily work. The selected group of families with many service needs also became a problem in the experiment. The aim was to collect together all the service plans made for the users and place them on the digital platform. The issues of the users were delicate, and because of a lack of clarity on what issues could be brought onto the platform, the professionals feared making mistakes and were wary of using the platform. The interviews pointed out that the power was in the hands of the users, and they could lead the process and decide what issues could be brought to a wider discussion. However, this required that the focus should have been on the users and not the service provider.

The missing discussion on the specificities of the application area was a serious shortcoming. In addition to the intra-organizational discussion, a discussion would have been necessary between the local level and the regulatory and governmental levels. The interviews revealed that the views on the interpretation of confidentiality issues and on the related possibilities for multiprofessional information exchange clearly differed between local professionals and governmental actors. The views between these two levels also differed concerning the whole exercise. Guidance from the responsible ministry was missing despite the nationwide effort, and the practitioners were doubtful about the impacts of the project because they had experience of discontinuity of policy initiatives. Actually, this discontinuity was realized in our case: after the change of the government, experimental development was no longer a focus on the political agenda, and parts of the funding were transferred to other projects.

Discontinuity is also presented in the lack of dissemination plans, even though the next stages after the experiment should be targeted from the beginning. If changes based on the experiment take place only in the experimenting organization, wider impacts on the service system are missed. The study showed that these problems occurred in the experimenting city as well as at the policy level and were caused by a
lack of learning practices. Administrative silos and poor collaboration between ministries caused a lack of common structures. Even though the experimentation failed, it offered the city and the nationwide policy program valuable learning on the possible pitfalls of experimental development. However, it remained unclear whether the lessons were seriously and constructively analyzed to make them assets in future experimental activities. In order to promote experimental development and public innovation more generally, these shortcomings should be tackled. Learning in and between projects, accelerating the dissemination of good practices, and common mechanisms and structures for them are required.

From the point of view of the need for long-term policy, it can be seen that the studied city actually made a good effort. There has been long-term development integrating services in healthcare, and the experimentation brought these ideas to the social sector. Even though the experiment did not succeed, it gave new insights into how to develop social services with their unique demands. Even though the development of integrated services has succeeded in the health sector, it does not mean that the same will happen in social services. However, the city should develop its skills concerning innovation management and also make sure that the professionals involved have the opportunity to participate in the development processes. More importantly, the user perspective and the ideas of co-creating services should be prioritized.
Table 7. Research results from Paper 2

<table>
<thead>
<tr>
<th>Theoretical perspective</th>
<th>Research results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Experiment-based innovation model</strong></td>
<td><strong>Application in the study case</strong></td>
</tr>
<tr>
<td>Merging planning and implementation</td>
<td>The case was part of a nationwide exercise that explicitly aimed to promote experimenting in the public context.</td>
</tr>
<tr>
<td>Paying attention to learning during the innovation process</td>
<td>An explicit focus on learning was missed.</td>
</tr>
<tr>
<td>Engaging users and grassroots employees</td>
<td>The basic idea of the integrated model of well-being included the collaboration between employees and service users.</td>
</tr>
<tr>
<td>Framing and contextualizing the problem at hand</td>
<td>The target of the development (customer processes in the integrated model) was well specified by the managers.</td>
</tr>
<tr>
<td>Fostering adaptive trial and error</td>
<td>The trial-and-error approach was not tested because the actual implementation of the new model was minimal.</td>
</tr>
<tr>
<td>Mobilizing necessary resources</td>
<td>The experiment was dependent on governmental resources. Reorganization of the work was not considered.</td>
</tr>
<tr>
<td><strong>Issues of the public sector</strong></td>
<td><strong>A top-down approach characterized the project.</strong></td>
</tr>
<tr>
<td>Traditional bureaucracy</td>
<td></td>
</tr>
<tr>
<td>Professionalism</td>
<td>The case organization was on the way toward becoming a hybrid form of expertise.</td>
</tr>
</tbody>
</table>
professionalism, i.e., a combination of occupational and organizational professionalism. familiar among the practitioners, and attitudes toward it were positive.

Innovation management
The top-down approach in the experiment focused on the basic idea and did not include systematic management of the innovation process. The lack of management and leadership made the experiment “voluntary” and secondary in the everyday work.

Impacts of digitalization
A digital platform for well-being data was a central element in the experiment; it was targeted to support the interaction between professionals and service users. The need for a digital tool was not clear to the practitioners. The solution was “cumbersome,” and together with confidentiality issues, it caused mistrust.

Interaction between local and governmental levels
Guidance from the responsible ministry was missing despite a nationwide effort. After a change in the government, experimental development was no longer a focus in the political agenda. The practitioners were insecure about the actual impacts of the project because they had experience of the discontinuity of policy initiatives. This weakened their motivation.

Dissemination of innovations
Dissemination was not considered in the project plan at the local level and was not discussed for the state-level project either. Organization of dissemination was recognized as a problem by the governmental representatives.

5.3 Paper 3: “Gamification as an enabler of mutual learning in complex health care systems”

Papers 1 and 2 studied the development of public services in the context of social services. The studies revealed the problems of experimenting in the public sector, including the remaining top-down management culture and the discontinuity of public policies. In addition, the papers pointed out that there was a lack of proper learning structures. Due to these difficulties, it is problematic to create services that are based on co-creation and have a wider impact on system-level change. Paper 3 focuses on one of the noted problems—the issue of learning. It studies how to promote dialogue and mutual learning in complex social and healthcare organizations undergoing change. Theoretically, the paper is based on gamification, the societal embedding of innovation, and the ideas of role switching. Based on these theories, this paper studies creating a systemic view of change in two case studies by
acknowledging relevant actors in the change process and seeing the change from different perspectives.

The approach of societal embedding of innovation (Kivisaari et al., 1999, 2004, 2013; Leväsluoto & Kivisaari, 2012) is used in this study as a theoretical starting point as it aims to facilitate and initiate innovations in multi-actor networks. An important objective of the approach is to create a dialogue between different actors and give them the possibility to create a shared understanding of the elements of a solution. By opening up the perspectives of the different actors, societal embedding aims to produce mutual learning. The approach provides information about the needs of the identified actors, their concerns, and conceptions of the discussed change. An important aim is to identify the promotive and preventive aspects of different actors and bring them into shared discussions.

The approach of societal embedding of innovation has used workshops, for example, to enhance mutual learning. In this study, gamified aspects are used in the workshops to create an environment where learning from others is promoted. Gamification involves the use of game-like elements and game-design principles in non-game applications (Deterding et al., 2011). The idea of gamification is to motivate and engage people by means proven to be effective in game environments. There are several game-related concepts: play, (entertaining) games, serious games, and gamification. The key difference between an entertaining game and its “serious counterpart” is that a serious game and gamification are intended to promote the production of something useful outside the game, whereas a game is played voluntarily for entertainment. Nonetheless, fun is a crucial part because when people experience positive feelings, they have the potential to be more creative and think more systemically (Fredrickson, 2003). However, fun elements are not enough for successful design, and the whole process should be thoroughly designed (Deterding, 2015).

In the study, the approach of societal embedding of innovation was used to create a framework for playing. In addition, the study used the Octalysis framework (Chou, 2015) to evaluate and develop gamified applications. The framework presents core drivers that should be considered to achieve a successful gamification concept. Role-playing is very common in games, and its potential in gamification has been recognized (Bellotti et al., 2014; Pesare et al., 2016; Ribeiro et al., 2014), but it is
typically applied to learning one’s own role in a system either as a professional or as a customer (e.g., Gokhale & Gokhale, 2015; Pesare et al., 2016).

In the empirical part (see the data acquisition and analysis in Section 4.1.5), the paper studied two social and healthcare organizations in Finland that are developing and implementing a technological innovation and a new service model. The first case organization was a university hospital that was implementing a new automated medication storage unit. A ward for renal patients was chosen as a pilot unit to test the innovation’s implementation. Even though the automated medication storage unit was a technological innovation, its use would require changes in practices and operational culture. The second case organization was a central hospital that launched a new clinical pathway for geriatric patients. The aim of the pathway, which was a document that described best clinical practices, was to enhance services to be more flexible, effective, and safer. This was done in cooperation with multiple stakeholders.

The interviews revealed that social and healthcare professionals usually perceive themselves as independent experts rather than as part of a complex healthcare system in which the actions of one professional affect the work of others and, subsequently, the operation and performance of the entire system. However, for the success of the change, understanding the complex system is important.

Contrary to previous studies, this study developed a gamified solution to enhance professionals’ views of other professions’ responsibilities in daily activities and to understand the reasons behind actions. Seeing things from the perspective of someone else makes the actor see a different part of a complex situation but also witness one’s own behavior from the other side of the interaction. Requiring people to play a role in which they express views that do not necessarily correspond to their personal opinions can facilitate internal change, promote novel dialogue, and bring new insights. This way, role-switching has the potential to foster social intelligence (Goleman & Boyatzis, 2008) by generating a real interest and the skill to see the feelings of those people needed for cooperation.

The gamified solution aimed at creating a dialogue between professionals and aimed to help build an understanding of the challenges related to the change. To create learning, the gamified solution placed the professionals in the role of another profession. The role-switching tool was developed together with the professionals
to enhance change processes and create mutual learning. The gamified role-switching tool was used in the workshops and is presented in Section 4.1.5.

Based on the results from the interviews and workshops, a summary of the visions and challenges from the point of view of different stakeholders (Tables 8 and 9) was presented to the managers responsible for the implementation of the automated medication storage units and clinical pathway for geriatric patients.

**Table 8.** Identified vision and challenges in Case 1

<table>
<thead>
<tr>
<th>Achieving the goal together</th>
<th>Patient</th>
<th>Pharmacist</th>
<th>Nurse</th>
<th>Doctor</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Vision</strong></td>
<td>Is familiar with medication and can communicate it</td>
<td>To become one of the key professionals</td>
<td>Implementing the patients’ medication prescribed by a doctor</td>
<td>Prescribing and monitoring up-to-date medication</td>
</tr>
<tr>
<td><strong>Challenge</strong></td>
<td>To become an active patient</td>
<td>Readiness to adopt a new role, resources, and attitudes of other professionals</td>
<td>Clear and practical instructions followed by all professionals</td>
<td>Practical and doable instructions followed by all professionals</td>
</tr>
</tbody>
</table>

**Table 9.** Identified vision and challenges in Case 2

<table>
<thead>
<tr>
<th>Better patient care results and ease of workload by enhancing the information flow between actors</th>
<th>Patient</th>
<th>Emergency care team</th>
<th>Nurse</th>
<th>Doctor</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Vision</strong></td>
<td>Will get the care she/he needs, and her/his needs are heard</td>
<td>In addition to emergency care, the team informs the hospital of all relevant information</td>
<td>Knows how to implement the clinical pathway for geriatric patients in comprehensive care</td>
<td>Knows how to implement the clinical pathway for geriatric patients</td>
</tr>
<tr>
<td><strong>Challenge</strong></td>
<td>Patients as passive participants in care processes</td>
<td>Information is unavailable</td>
<td>Clinical pathway is not familiar, and information blocks appear</td>
<td>Not all the needed information is available</td>
</tr>
</tbody>
</table>

In Case 1, the vision represents the attitude that only by working together will the change be possible to achieve. The results showed that patients and pharmacists should be included in the collaboration more tightly to enhance the change. For the
healthcare professionals, clear instructions and working practices followed by all staff members were seen as important. However, there were many concerns about the use of new technology. The poor usability of the information system, excessive rigidity of the new system, fear of losing information, increasing workload, and unpredicted problems using the new automated medication storage unit were identified. In addition, the lack of information about future changes raised concerns.

In Case 2, the vision represents the idea of what the benefits of the new clinical pathway are for geriatric patients and what the requirements are for it. In this vision, patients receive the care they need, and they are seen as equal partners in care. The role is new, especially for older people who are not used to being seen as co-creators. In the vision, the emergency team pays more attention to the information that is needed by the hospital. The problem is that not all information is always available. For nurses and doctors, the vision highlights the importance of knowing how to implement the clinical pathway to provide geriatric patients with the special care that she/he needs. The challenge is missing information and information blocks.

The results from the study indicate that the gamified role-switching method inspired and gave means to the participants to enhance their systemic understanding of the organization and to improve dialogue. The healthcare professionals who participated in the gamified workshops felt that they were involved in the change processes and that their opinions had an effect. Gamified elements in the workshops were evaluated to make the atmosphere inspiring and to open minds to new viewpoints. The role-switching method made the participants see the situation from other perspectives and thus promoted collaboration and change processes. The workshop and the discussion between the participants did not offer solutions to all the identified problems. However, solving all the identified problems was not the aim of the workshops, but rather to identify the problems, to offer different perspectives, and to bring them to discussion.

The results indicate that the gamified solution helped promote double-loop learning (e.g., Quist & Tukker, 2013; van Mierlo et al., 2010), which is required for systemic change. In the study, the changes in the two organizations were based on digitalization (automated medication storage unit) and creating a systemic offering of the services (clinical pathway for geriatric patients). To promote the change, some basic assumptions of the system needed to change. The gamified solution helped
identify relevant stakeholders and their new roles and promoted a shared understanding of the change.


Papers 1 and 2 noted that the discontinuity of public policies is one of the factors preventing change toward co-created services. The system is complex, and policy initiatives are shifted when the government changes. The problem at hand is that the local-level managers and professionals do not know which development processes are important for them and how they are linked to each other. The fourth paper considers this notion and aims to provide a means to tackle the issue of discontinuity by developing a vision pathway for the future and providing policymakers with an online tool to estimate the impacts of policy actions.

Paper 4 studies systemic change in public sector services in the context of the prevention of T2D in Finland. T2D was selected as a context for studying systemic change and ways to promote it since it is a chronic disease with wide social and economic impacts. It is also a disease in which preventative actions have been proven to be effective, but the implementation of these actions has been difficult. To promote change toward a more sustainable system, a systemic understanding of the healthcare system is needed. There is also a need to support policymakers in complex decision-making where the impacts of actions are difficult to picture. The paper presents the development of a web-based online tool that combines a vision pathway with transition-focused storylines and forward-looking health economic scenarios to promote change. The aim is to provide policymakers with a tool to visualize the overall picture of needed societal changes and to support an impact assessment of alternative policies in the prevention of T2D.

Theoretically, the paper is based on transition studies and health economic decision modeling and aims to combine ideas from these methodologies to promote change. Transition studies have faced demands that they should initiate and catalyze transitions and not focus only on describing them (Köhler et al., 2019). Köhler et al. (2019) have noted that transition scholars should focus on system innovation in-the-making and develop forward-looking analyses and policy-relevant scenarios and
toolboxes. The basis of the vision pathway in this study is the transition pathway typology that was introduced in transition studies in 2007 (Geels & Kemp, 2007), and it has been used to characterize the overall course of development of innovation and frame the analysis of transitions that have occurred.

The complexity of transitions challenges the anticipation of ex ante impacts of the changes, and the research in transition studies has thus avoided formal modeling and quantification (Geels et al., 2018). In their research, Geels et al. (2018) noted that the impacts of innovations have not received significant attention in socio-technical research. The problem is that authors in socio-technical research have questioned the possibilities of anticipating ex ante impacts and measuring them ex post due to the complexity of change (Geels et al., 2018; Köhler et al., 2019). However, policymakers tend to favor quantitative elements (Fortes et al., 2015), and bridging quantitative and qualitative elements to forecast future impacts has become an important research stream in transition studies, even though there are identified challenges in using the methods (Geels et al., 2018; Köhler et al., 2019). Due to these notions, the study used health economic decision modeling to meet these needs. Health economic decision modeling is commonly used to support healthcare decision-making. It is based on mathematical modeling that aims to inform policy decisions on how to maximize health returns from limited resources under uncertainty (Briggs et al., 2012; Caro et al., 2012; Eddy et al., 2012; Roberts et al., 2012; Siebert et al., 2012).

Bringing together transition studies and methods from health economic decision modeling proved to be challenging in this study. Because of methodological difficulties, it was necessary to focus on a specific theme rather than the entire change needed to move toward the prevention of T2D. Digitalization was selected as a theme because it was identified (based on the interviews) as a cross-cutting theme. The empirical data and methods are presented in more detail in Section 4.1.5.

The results from the interviews showed that digitalization was framed positively, providing a range of solutions for improving health promotion, even though digital technologies have not yet transformed healthcare. Stakeholders saw opportunities for more agile, citizen-centered, customized, and empowered care. The stakeholders felt that digital technologies can improve health promotion through empowering tailored and customized individual health promotion, by integrating healthcare system data with individually collected data, and by using gamification and visualizing
the impact of health promotion practices. Moving toward an increased focus on prevention is a means to achieve a more sustainable healthcare system. However, the results showed that attempts to increase the focus on preventative healthcare are still hindered by the current information input and financial incentivization structure within healthcare: the effects of many health promotion activities are hard to measure, and thus investing in means to promote them is hard to legitimize. It is essential to provide opportunities for niches to develop innovations, but showing the impacts of innovations focusing on prevention requires new tools and value assessment approaches (Haverinen et al., 2019). It is also important to acknowledge citizens’ varying capabilities to utilize digitalization. Nonetheless, new tools are not just for younger citizens, but they can also motivate senior citizens, as pointed out by Harjumaa et al. (2020).

Based on the results of the interviews, a presentation of Finland’s current system with a focus on prevention of T2D in the MLP model was developed. The aim was to visualize the multiple technologies, regulations, and practices needed for the change. It is not a comprehensive picture of all the issues related to the prevention of T2D, but it aims to picture the ongoing changes. It also offered a contextual basis for the creation of the vision pathway. The next step was the development of a vision pathway where the identified change themes were placed on different levels of the MLP model. In this study, the transition pathway is called a vision pathway because of its focus on forward-looking analyses instead of analyzing past transitions. The vision pathway was named “change toward prevention of T2D in Finland by 2030.” The first theme was embedding and scaling up health promotion interventions, which are situated between the niche and the regime. The challenge is that innovations remain local and do not comprehensively change the healthcare system. Creating health promotion innovations also demands new financing structures and is situated in niches. Citizen-centric and personalized healthcare requires the development of innovations and changes in the regime. Setting health promotion a priority is something that policymakers and politicians can do, and it is thus situated in the current regime. Supporting a healthy lifestyle is a system-level aim that crosses different sectors and is not situated only in the health sector.

The vision pathway also included transition-focused storylines describing the barriers and facilitators of change (Figure 7). In the paper, we present the storyline of digitalization. The analyses of the interviews point out the issues that facilitate or act as barriers to change. These observations are situated in the MLP model to show
the actions needed at different levels. Digital tools that have been tested in the current system have shown that they have the possibility to empower citizens and give them tools to promote their health (e.g., Koivumäki et al., 2017; Mäkinen, 2006). However, the regime is not utilizing the full potential of digitalization (e.g., Honka et al., 2011), and the system is trying to cope with the old rules and ways of working and interacting. There were many possibilities in the niches identified by the interviewees. As citizens collect increasing data about their health, interaction with the health system would be a great advantage to citizens and their ability to prevent diseases. Citizen centricity and new ways of delivering services can be seen as potential solutions for digital capability problems. The new tools are not just for younger citizens, but they can also motivate senior citizens, as pointed out in the study by Harjumaa et al. (2020). Gamification also has possibilities to promote a longer usage of digital tools, and different applications can help visualize changes. However, as the sociotechnical change literature suggests, developing these new innovations in niches requires protection from market selection (e.g., creating opportunities to test new innovations and providing funding). If an innovation that focuses on preventing diseases cannot prove its impacts, it is difficult to convince policymakers and other funders to provide resources for innovation development.
In addition to the vision pathway and transition-focused storylines, the study presents three health economic scenarios of expected economic outcomes of a digitally supported prevention program in different risk-based target subpopulations. The scenarios are 1) targeting a digitally supported prevention program at all Finnish adults aged 45–75 years of age, 2) targeting a digitally supported prevention program at all 45–75-year-old adults at a moderately elevated risk of T2D (FINDRISC Score > 12), and 3) targeting a digitally supported prevention program at all 45–75-year-old adults at a high elevated risk of T2D (FINDRISC Score > 15).

The results showed that targeting a digitally supported prevention program at adults with the highest risk could be expected to provide the highest relative total savings at the population level during the next 10 years. The results of these scenario projections indicate that it is worthwhile offering a digitally supported T2D prevention program to all Finnish adults at 45-75 years of age. However, if the healthcare system can afford to provide the prevention program to only a fraction of adults at 45–75 years of age, the highest expected savings could be obtained by prioritizing the prevention program based on the T2D risk.

To promote preventative policy actions, a web-based online tool with interactive quantitative modeling and a qualitative vision pathway was developed. As mentioned above, the web-based online tool was developed to enable user-defined scenario analyses of the savings potential in different target populations, while considering different values, for example, for the cost of the prevention program, the size of the target population, etc. In addition, the online tool combined these user-defined scenarios with the transition-focused storylines to provide a vision pathway for change in the prevention of T2D in Finland. The online tool was targeted at policymakers in the municipalities to help estimate the potential savings of using preventative tools to reduce T2D. Therefore, it was considered important to integrate the vision pathway with the online tool, as it would provide policymakers with an overall picture of the needed changes in the system.

The research results from the study indicate that currently the change in Finland toward the prevention of T2D is situated on the transformation pathway (e.g., Geels, 2016). However, the interviews in this study confirm previous findings (e.g., Honka et al., 2011) that developing new digital services has faced challenges, a new system
has not yet emerged, and change has not yet happened on a larger scale. Nonetheless, the window of opportunity is about to open through the introduction of digitalization. Geels and Schot (2007) note that the transition pathway can shift to another pathway. Our analyses indicate that the current transformation pathway is shifting toward a reconfiguration where multiple niche innovations solve the problems in the regime. This leap from a transformation pathway is, in many ways, challenging and represents a fundamental change in the system, which may lead to a transition to a completely new system.

So far, the feedback received from local decision-makers about the online tool has been supportive. However, the feedback called for a more simplified user interface, which could be developed in the future. From the point of view of policy impacts, the online tool has raised interest not only among local decision-makers but also in the Finnish Prime Minister’s Office. The joint analysis, assessment, and research activities (VN TEAS), which work under the leadership of the Prime Minister’s Office, initiate funding that supports decision-making procedures, working practices, and management by knowledge. One of their funding calls was based on the presented online tool, which they have identified as a unique policy-relevant tool; thus, the objective of the call was to find out if there are similar tools published in other countries and if these recognized tools could be applied in the Finnish context to support local planning and decision-making. This could be considered a clear indication that there is a need to develop and use these kinds of interactive tools to help steer policymaking toward more sustainable health systems.

This study has grasped some of the problems identified in the transition literature. First, it has followed the same ideas that Foxon (2013) used in his study by describing possible futures. However, Foxon (2013) highlights the need to estimate the expected cost of different pathway options. There are also identified needs to evaluate the impact of using digital tools (EXPH, 2018). This study has answered this need by creating scenarios. In addition, Papachristos et al. (2013) noted that it would be beneficial to study change from the point of view of actors outside the system. For this, the study also interviewed outside actors to cover these different views since the prevention of T2D is based on a range of social and environmental factors and interventions that are not directly connected to healthcare.

Second, as Geels et al. (2018) have noted, it is not easy to bridge transition studies with quantitative modeling due to the systemic nature of innovations. However, they
noted that there are circumstances in which the use of quantitative tools is possible. There should be sufficient historical data on the impacts of changes, and the system should be sufficiently stable for future impact modeling. The examples of using qualitative and quantitative methods are mostly focused on energy and environmental sustainability issues, and the sustainability of healthcare systems has not been studied from this perspective. In the presented study, the use of quantitative modeling and vision pathways has followed the notions of previous studies. Instead of modeling the entire transition toward the prevention of T2D, the study focused on a single theme of digitalization. There is accurate medical data on the impacts of using preventative methods on citizens’ health, which were used in the study to estimate future impacts. In addition, the healthcare sector can be seen as sufficiently stable to estimate the impacts.

The third issue pointed out in the transition studies field is the identified need for a focus on system innovation in-the-making and development of forward-looking analysis, policy-relevant scenarios, and toolboxes due to initiating and catalyzing transitions and not just describing them (Köhler et al., 2019). In addition, Foxon (2013) has called for more research to estimate the expected costs of different pathway options. What is new in this study, from the point of view of transition studies, is the developed online tool with interactive quantitative modeling and the qualitative vision pathway, together with transition-focused storylines. In this respect, the study follows the ideas presented by Rogge et al. (2020). The online tool is an addition to the study by Rogge et al. (2020) as it gives the users information about the needed changes and the possible impacts.

The paper concludes that transition studies can provide a means to steer the change in public policymaking toward co-created services. There is a need to visualize the systemic changes in the system to make the needed changes more concrete and to help understand the interlinkages between multiple changes. The presented tools can help visualize a complex system and provide a means to assess the impacts of different policy initiatives.
It has been put forward that modern society is a complex system with grand challenges and wicked problems that are not easy to solve. The problems are multilayered and situated at different levels of society. It is crucial that we try to solve these grand challenges, and the research community has tried to provide means to understand and tackle them. Even though there are good examples of changes toward an environmentally sustainable society, more actions are needed. However, in many cases, the changes seem incremental and do not transform the system in the comprehensive way that is required to meet these grand challenges.

This dissertation has focused on studying public sector social and healthcare services in Finland, where the aging population, together with decreasing tax revenues, the digitalization of society, and high expectations of users toward personalized services, has challenged the system’s sustainability (e.g., Rissanen, 2019). The research on public policymaking has provided a theoretical lens through which to study these issues. The research focusing on public policymaking has studied the evolution of public sector services through the paradigmatic views of Public Administration (PA), New Public Management (NPM) and New Public Governance (NPG). NPG has been said to provide a means to tackle the characteristics of modern society by highlighting cooperation between actors. However, a transition toward the use of co-creation in service production on a wider scale has not happened, even though there are efforts to introduce cooperation methods in public policymaking (Meriluoto, 2018). The characteristics of PA and NPM are still dominant, and NPG has not provided the expected results (e.g., Jo & Nabatchi, 2019; McMullin & Needham, 2018). Research in public policymaking has provided case studies on co-creating public services and studies focusing on the barriers to the use of co-creation. Social and healthcare has been an area of interest for research in public policymaking and, more precisely, research in service management, because of the intangible nature of services and the way services are co-produced (Williams et al., 2016). However, experiments introducing co-creation have been scattered, and what has been missing is a systemic view of the change and how it could be promoted.
This problem was the driving question behind this dissertation. It focused on studying whether co-creation could change the Finnish social and healthcare system. In addition, this dissertation questioned whether change could be promoted. For this purpose, the research stream of transition studies was included in the dissertation to study whether its theoretical and practical frameworks could provide tools to understand and promote change.

Transition studies claim that the system of social and healthcare should be understood from a systemic perspective and viewed as a constellation of interconnected elements, including technical artifacts, scientific knowledge, industry, markets, consumption patterns, infrastructure, policy, and cultural meanings (Geels & Turnheim, 2022). The conceptual framework of socio-technical systems, and within it the MLP (Geels, 2004), originates from transition studies and is used in this dissertation to make sense of the multilayered system and to explain the transition in the system through systemic innovations. Transition can be seen when the dynamics at the landscape, regime and niche levels link up and reinforce each other. Transition studies also focus on promoting transition through the frameworks of TM and SNM. These frameworks are used in this dissertation to understand how to promote and steer the change in the Finnish social and healthcare system toward the use of co-creation.

The discussion section will first focus on how the literature has answered the research questions, followed by the contribution from the empirical part of the study. After that, the theoretical contribution based on this dissertation is provided, and the fulfillment of the scientific criteria is discussed. At the end of this section, future research needs are presented, and managerial and policy implications are provided.

6.1 Answering the research questions based on the theory of public policymaking and transition studies

This dissertation has studied how the public sector has been understood and how it has evolved from the paradigm of PA to NPM and toward NPG. NPG has highlighted relationships, through co-creation and co-production, with customers and is rising to be considered the next paradigm in public administration. Public sector services are renewed in a complex network of actors who all have different
capabilities to innovate. The complexity of networks was presented as it brings to the discussion the challenges of renewing public services and highlights cooperation between different actors to meet the different perceptions, strategies, and rules of actors (Klijn & Koppenjan, 2014).

The main interest in the dissertation was the co-creation of public services, as it has been seen as a possible way to answer persistent problems in our society (e.g., Jaspers & Steen, 2019; McMullin & Needham, 2018). This led to the first research question, “Does co-creation offer possibilities to reform public social and healthcare services in Finland?” As Go Jefferies et al. (2019) have noted, previous research has focused on describing examples of user involvement in public service production and has shed light on the facilitators and barriers to effective co-production. The dissertation has identified barriers from the previous literature that the introduction of co-production and co-creation has faced (e.g., Fleming & Osborne, 2019; Torfing et al., 2019; Vanleene et al., 2015). For example, the discontinuity of funding and seeing innovation as something extra on top of “real” tasks was experienced by the public service providers interviewed in the course of this study. There is a need for a shift in the culture of how public services and citizens are understood. If the innovation processes, where co-production and co-creation are at the center, are not supported sufficiently, there is also the possibility of value co-destruction. In addition, innovations do not always succeed, and the risk of failing is seen as a failure that is not accepted in the current culture. Osborne et al. (2020) have pointed out that managers, professionals, and funders in the public sector should discuss these issues, agree on what is acceptable, and learn from the mistakes that have happened. The fear of failure in the innovation process is a major barrier in the public sector that should be understood more thoroughly.

In addition to barriers, the positive impacts of co-production and co-creation have also been analyzed in the existing literature. Co-creation is seen to hold the potential to produce cost savings; to increase service quality, citizen participation, and empowerment; and to expand user choices, improve mutual learning, enhance legitimacy, mobilize resources, and lead to improvements in efficiency and effectiveness (e.g., Brandsen et al., 2018a, 2018b; Fleming & Osborne, 2019; Fox et al., 2020; Williams et al., 2016). What is interesting is the notion by Voorberg et al. (2015), who point out that in many cases there are no specific objectives mentioned of why it is important to co-create or co-produce. Co-creation and co-production are seen as value in themselves, and the objective can be to increase citizen
involvement. However, the question becomes whether this is enough to change the way public sector services are produced. Should the objectives and the ways to measure the impacts be approached differently?

Even though the research focusing on the facilitators and barriers of co-production and co-creation has value, Go Jefferies et al. (2019) and Jo and Nabatchi (2019) have noted that the research in public services has focused too much on describing user involvement in public service production and doing research on the facilitators and barriers in effective co-production. They see that research has focused on examples of purposeful user involvement that happens outside normal service provision. They point out that the role of users is broader than just participating in initiatives provided by public agents. In addition, Torfing et al. (2019) see that co-production can be viewed as a process that has been set up by a government agent. Involving customers is seen as something that the government is responsible for. In addition, Osborne (2018) highlighted that the roles, experiences, and values of users have been neglected in public service research. Therefore, the service management literature has challenged these basic assumptions of public service research and how it sees co-production and co-creation and introduced the concept of PSL. In PSL, value is created only when users use the public service offering and when it interacts with the user’s life experiences (Osborne, 2018; Osborne & Strokosch, 2013). The goal is not just to develop organizational processes to meet citizen’s needs but to transform the service in a way that meets the expectations of citizens and, at the same time, fulfills the societal function that it has.

These developments are particularly interesting from the point of view of renewing social and healthcare, where the empowerment of citizens has gained interest. The special focus in the dissertation was on renewing social and healthcare and bringing citizens to the heart of designing and producing public services to meet their demands and to create efficient and effective services. However, it was acknowledged that the change toward co-producing and co-creating social and healthcare services is not easy. Park (2020) noted that the advantages of using customers’ experience and knowledge are recognized in the field of social and healthcare, but clinical or organizational practices are still prevalent. Go Jefferies et al. (2019) highlight the importance of acknowledging the different types of customers and their capabilities to co-create services in social and healthcare. The idea presented in Park’s (2020) study of user–provider co-production is interesting because it recognizes that professionals and customers have different kinds of
knowledge and should be combined in service production. The model sees that there is a mutual dependency and there should be collaborative interaction in the service production. However, this requires that social and healthcare professionals share power with citizens, which has proven to be difficult. Fleming and Osborne (2019) have noted that models of service delivery in social and healthcare are evolving toward prevention and new forms of partnerships that highlight the personalization of services. Digital technologies can help identify citizens’ needs and can provide opportunities to co-produce and co-create services, where the focus is not just participating as an invited guest to a development project but actually to be in the center of service provision as described in PSL.

As Torfing et al. (2019) noted in their study, the NPM paradigm introduced service users as customers who have the right to demand high-quality services. At the same time, service users did not see themselves as co-producers or co-creators who needed to contribute to the services they were receiving. They also added that growing demands from users, competition with private firms, and declining funding have created significant problems in the public sector. As PSL places service users at the core and promotes the idea that success and value are built by the users, then the abilities of users will come to the fore. However, as professionals have a strong role in social and healthcare service systems, it is important to convince them of the essence of service users’ role. According to Torfing et al. (2019), professionals have not yet perceived the benefits of the service user’s central role.

To answer the grand challenges and in aiming to achieve a socially sustainable society, the Finnish Parliament adopted legislation in June 2021 to establish well-being services counties and reform the organization of healthcare, social welfare, and rescue services (Finnish Government, 2022a, 2022b). This reform changed the structures of the social and healthcare systems, but it did not change the practices and ways services were produced. In Finland, the development of social and healthcare services has followed international trends when looking at developing the sector through experimentation projects. Experimentation as a governance approach has gained interest, and there are multiple experiments that have been implemented (Stenvall, 2017). The problem has been that experiments and experimental innovations in the social and healthcare sector have not been particularly successful. In many cases, they are isolated and short-lived experiments. Of course, some of these experiments have been able to produce new services and cost savings or promote customer satisfaction, but they have not been successful in transforming
the social and healthcare sector. At the moment, they have only had a small impact on the system, and the transformation of the system is far in the future.

As described, the paradigm of NPG and the forms of cooperation it offers as a solution hold many opportunities for transforming the social and healthcare sector, but there are multiple challenges. It can be assumed that NPG and its principles have not established their place as a dominant way of delivering services in the social and healthcare sector and have met the promises that were expected (e.g., McMullin & Needham, 2018). Based on previous studies, this dissertation argues that co-creation has possibilities to reform the social and healthcare sector, but there is a need for systemic changes to utilize the potential of co-creation. This dissertation has categorized systemic changes into the following themes:

1) Changes in professional culture, roles, and leadership  
2) Enhancing the use of technological tools  
3) Creating opportunities for co-production and co-creation  
4) Developing new tools to evaluate public services and scaling up innovations
Figure 8. Overview of the systemic and concrete changes toward transition on co-production and co-creation.
The four main themes also include concrete changes required for systemic change. These changes are introduced in Figure 8. Concrete changes in theme one stressed changes from the professional side. There is a need to develop opportunities (e.g., funding and new positions) and competencies (e.g., training, new skills as co-creation managers) of professionals on how to utilize co-creation. A change in professional culture toward understanding the essential role of users is required. However, this will not happen without a new type of leadership. The second theme noted that systemic change can be promoted by enhancing digitalization and developing new tools where users can be co-creators of services. To successfully co-create solutions with users, the third theme notes that it should be well established as to what co-creation means, who the co-creators are, and their expectations and how they co-create value should be understood. In addition, the process of co-creation needs to be motivating and inclusive and enhance the empowerment of users. Issues related to regulation should be understood as they differ in different contexts. The final theme focused on the need to demonstrate the impact of co-creation, which requires new evaluation methods. Evaluation is also important when aiming to scale up co-created innovations, which are essential in transitions.

In addition to public policymaking and co-creation of services, this dissertation has focused on transition studies. Transition studies aim to conceptualize the changes at different levels and explain how these changes can occur and how the transition processes can be guided to fulfill their goals. Furthermore, grand social challenges cannot be solved by incremental innovations and improvements, and they require a radical shift to a new socio-technical system (e.g., Köhler et al., 2019). MLP, TM, and SNM are the theoretical and practical frameworks used in transition studies. They have evolved in parallel and have been used as policy tools by complementing each other.

This dissertation has identified key research debates in transition studies, classified as emergence, diffusion, and impact (see Section 3.5.2). In addition to the main thematic discussion, cross-cutting themes of policy, politics, governance, and the co-construction of impacts were identified. The theme of policy, politics, and governance is seen as one of the core elements in recent transition studies and integrates the two theoretical approaches used in this dissertation. Whereas the
research on public policymaking can benefit the use of transition studies to understand and promote systemic change, transition studies could make use of the policy studies to gain an understanding of the coevolution between policy and socio-technical change (e.g., Kern & Rogge, 2018). It is also the focus of this dissertation as it includes discussions of mission-oriented innovation policy, transition governance, experimentation as a governance approach, and long-term policy. All of these discussions have interesting viewpoints when studying the socio-technical change toward the use of co-creation in Finnish social and healthcare services.

MLP offers a theoretical framework for studying transitions of socio-technical systems. MLP is used in this dissertation to make sense of the multilayered system and to help analyze the change toward the use of co-created social and healthcare services. It sees that the system should be understood from a systemic perspective and viewed as a constellation of interconnected elements, including technical artifacts, scientific knowledge, industry, markets, consumption patterns, infrastructure, policy, and cultural meanings (Geels & Turnheim, 2022). To answer the second research question, “How can transition studies help understand and develop public social and healthcare services?” it can be argued based on this dissertation that MLP can provide a means to understand the systemic nature of required changes in the Finnish social and healthcare system toward the use of co-creation.

In addition to MLP, TM and SNM also offer theoretical starting points and practical tools to enhance transition. These approaches can better answer the question, “How can transition studies be used to develop public social and healthcare services?” Development processes can be viewed from the TM point of view, where the focus is on setting programs that are long-lasting or from the SNM approach that focuses on niche development. These approaches can also be combined to develop a sociotechnical system. As the name states, SNM is focused on developing niches and bringing regime transformation based on experiments and providing shelter for the development phase of these innovations. As the SNM framework has evolved, it has gathered ideas from the MLP and has thus come closer to the ideas of TM. TM still differs from SNM as a more comprehensive framework toward transition, focusing on other systemic instruments besides transition experiments. However, the ideologies in these frameworks are close to each other, which helps integrate the approaches. What connects these approaches is the notion that the systems are
complex, and the changes are an interplay between different actors, institutions, and levels.

The development of co-created services can benefit by utilizing the ideas from transition studies. For example, Geels (2020) has noted in his research that addressing grand societal challenges requires transformative innovations in the social and healthcare field. This dissertation claims that transition studies can help understand the needed systemic changes and steer the change. The use of TM and SNM can provide new tools to promote systemic change in Finnish social and healthcare systems toward co-created services. Transition studies can provide a systemic understanding of the needed changes at different levels and provide tools to promote changes in complex systems. Using the theories from the transition literature, it is possible to understand and make visible the different levels in the system and how they together enable or prevent change.

6.2 Answering the research questions based on the empirical study

The theoretical part of this dissertation provided a sound foundation to study the changes toward co-created services, as well as the possibilities that transition studies could provide understanding and promote systemic change. The theoretical part of the study highlighted the need for systemic changes in the social and healthcare systems and stressed the need to study these issues from a systemic perspective. In addition, the transition frameworks of MLP can be used to understand the systemic nature of the required changes in the Finnish social and healthcare system toward the use of co-creation. Furthermore, TM and SNM could provide a means to promote change in the Finnish social and healthcare sector.

The empirical part of the dissertation aimed to provide new information on co-creating public services based on a case study in which the aim was to develop digitalized services to promote cooperation between users and professionals. To answer the second research question, an action research approach was selected. The first study focused on change processes in organizations and whether change could be promoted through gamified solutions, which were based on the ideas of TM and
SNM (Paper 3). The second study questioned how to promote systemic change in public sector services in the context of preventing T2D in Finland (Paper 4).

For the first research question, “Does co-creation offer possibilities to reform public social and healthcare services in Finland?” the theoretical part of the dissertation found that co-creation has the possibility to reform public social and healthcare services if the identified systemic changes can be promoted. The empirical study in this dissertation confirmed some of the main findings from the literature but also provided new insight into the opportunities for co-creation and renewing public social and healthcare services in Finland. The results highlighted the following issues, which need to be understood and promoted for the development of co-created services:

1. Professionals and users need continuous support in co-creation development processes.

The research results from Papers 1 and 2 noted that co-creating services with professionals and customers is still a new issue. The study noted that the professionals had a positive attitude toward user participation and the use of digitalized tools. However, a positive attitude alone is not enough if the professionals do not have the necessary competencies or tools to promote co-creation. Since the professionals did not know how to help the users, they did not know how to participate in the process. It was also unclear what the responsibilities should be in co-creation processes and how to execute a process in which different views are discussed.

2. Specific context matters when co-creating social and healthcare services.

The context has significant relevance in the social and healthcare sector, where the situation and capabilities of users may vary substantially. Even though co-creating services could go smoothly in one sub-sector, it does not mean it will go the same way in another. The context in Papers 1 and 2 was very demanding, and the users of the new service did not have extensive resources to co-create. In addition, their issues were sensitive, and they were skeptical about sharing information about their service needs. The question of how to co-create should be carefully considered in every case, and the methods should be adjusted accordingly.
3. The need to strengthen regional public policymakers’ experimental and innovation management skills.

The first two papers pointed out that the management of the city did not have sufficient skills for experimental development and innovation management. This was visible through the lack of opportunities from the professionals’ and users’ sides to participate in the development activities. Even though there were positive attitudes toward development, the management did not seize the opportunity. Development did not follow the ideas of NPG or co-creation and was a top-down process. The study stresses the importance of management capabilities in co-creation service development.

4. Putting users at the center of co-creation development processes.

Papers 1 and 2 presented an attempt to develop a new service model that offered users a new role of “leading” the service process. The idea consisted of developing a new tool, the digital platform, where the users could manage their service process. If the idea is that users are the creators of value, then the co-creation of services should be led by them. The study revealed that the users had the chance to take the lead. However, this experiment did not succeed. The customers were not invited to co-create; thus, it was difficult for them to seize this opportunity. They did not have sufficient information, and the created service did not meet their demands. This illustrates the need to invite users to the development process from the beginning. It does not mean that they should just be invited guests but bring them to the center of services to make sure that the service answers their needs.

5. Empowerment of users through the use of digital tools requires help from professionals.

With the use of digital tools, users could have had the opportunity to start learning to be the co-creators of services. However, the users did not have extensive resources due to their situation, and co-creation would have required that the management of the city and professionals would have helped the users take this new role. This notion is closely related to the previous notions. For the users to be the co-creators of value, there should be sufficient knowledge on how to co-create on
the management and professional sides. In addition, users need to understand that they have responsibilities in participating in the development of service and service co-production. They are not just customers but co-creators who have responsibilities. Users need a new understanding that they are contributors or co-creators of services.

For the second research question, “How can transition studies help understand and develop public social and healthcare services?” the empirical part of the dissertation confirmed the findings from the previous literature. In addition, the studies brought new understanding to transition studies on how to promote double-loop learning and ways to steer the change through vision pathways and tools for policymakers. These needs were identified from the previous literature, as well as from the study that focused on developing co-created services. The empirical study showed that transition studies could provide the following:

6. A better understanding of systemic change and how to promote transition.

The empirical studies revealed that public policy initiatives aiming to achieve co-creation need to see policy initiatives as systemic and need to promote innovations systemically. The study presented in Papers 1 and 2 noted that there was a lack of dissemination plans to utilize the results from the experimentation. It is necessary to connect experiments to a larger and wider development frame to promote experiments to become more in a temporal, spatial, and structural sense (see, e.g., Sengers et al., 2020). MLP can provide a framework for understanding the systemic aspects of change, and TM and SNM can promote change by providing an approach to steer and develop innovation and learning. The study presented in Paper 3 developed a gamified role-switching method that enhanced systemic understanding and improved dialogue between stakeholders. Paper 4 presented a way of visualizing the needed changes in vision pathways toward change and provided an example of developing a tool for policymakers to promote change by assessing the impacts of policy actions.

7. More long-term development to support the transition toward co-created services.
Paper 2 pointed out that the discontinuity of public policies and changing policy agendas at the national level were some of the reasons that caused the experiment to fail. At the regional level, the experimentation project was a continuity of similar projects, but it was not linked to any certain development framework and was left with a dependency on national funding (which ended after the electoral term ended). The TM framework, together with SNM, can help set long-term targets for development. A vision pathway that was created toward the vision of preventing T2D in Finland can be used to visualize these long-term objectives at different levels and to see the systemic changes that it requires.


Mistakes and failures are part of the nature of innovation. However, the study presented in Papers 1 and 2 pointed out that lessons from failure were not constructively analyzed to make them an asset for future development activities. In addition, to produce systemic change, double-loop learning is essential. Paper 3 focused on developing organizational learning structures that would support an understanding of the systemic nature of the change. This dissertation has the starting point of seeing the social and healthcare system as a complex system. Klijn and Koppenjan (2014) have stated that the coordination of policy actions (e.g., in the social and healthcare system) is difficult when the perception of the problem and its solution are seen differently. In addition, different strategies and sets of rules between actors make the system complex. What is needed is a joint frame of reference and shared meaning among actors. TM and SNM can provide tools to govern this complexity by setting up arenas for discussions to create a shared meaning of the problem and its solutions. Paper 3 captured this notion and aimed to promote dialogue between actors by utilizing approaches based on transition studies. One of the aims was to develop a method to promote dialogue and double-loop learning, which was seen by the actors involved as inspiring and useful.

The presented findings from the empirical study are shown in Figure 8, which presents the systemic and concrete changes toward transition on co-production and co-creation with some modifications and additions. In Figure 9, the themes that were previously noted in the existing literature and that were confirmed by this dissertation are bolded. This dissertation also provided new insights into how to
promote the transition toward co-creation in Finnish social and healthcare. The empirical findings highlighted the importance of the context. The previous notions of understanding co-production and co-creation are put under this theme. The users are also placed in the center of this figure, highlighting their role. In addition, double-loop learning and connecting experiments to a larger and wider development frame are noted in this figure. The theoretical contributions based on these findings are discussed next.
Figure 9. Systemic and concrete changes toward transition on co-production and co-creation based on previous theory and empirical finding.
6.3 Theoretical contribution

Several contributions can be made to the theoretical discussion of public policymaking and transition studies based on this dissertation. For public policymaking, this dissertation has identified the systemic changes that are required for a transition toward co-creating public social and healthcare services. These systemic changes include changes in professional culture, roles, and leadership; creating opportunities for co-production and co-creation; developing new tools to evaluate public services and scaling up innovations; and enhancing the use of technological tools. The empirical part of the dissertation confirmed these notions and pointed out some of the critical issues in the development of co-created services. In addition, this dissertation has aimed to study whether transition studies can be used in understanding and promoting change toward the use of co-creation and, through action research, has developed methods and tools to promote and steer the change processes.

The study confirmed previous notions of the importance of support for professionals and users. There is a need for support in understanding what co-creation actually is, how it should be promoted, and what the roles are of different stakeholders when it comes to co-creating services. Previous studies have noted the importance of training and adding competencies to professionals (Steen & Tuurnas, 2018; Tuurnas, 2015). However, this dissertation highlights that training should also be complemented by learning where the perception of the system is changed, thus promoting transition. Double-loop learning is at the core of systemic change. As MLP notes, the regime actors carry a set of rules that guide their actions and perceptions (Geels & Schot, 2007). Double-loop learning happens when the stakeholders change their underlying perceptions and assumptions of the system (Quist & Tukker, 2013; van Mierlo et al., 2010). This notion highlights the need to develop learning structures to promote systemic change. TM and SNM can provide a framework and structure for public policymaking on promoting learning in complex settings.

As the study showed, this does not happen without sufficient management capabilities in terms of understanding the concept of co-creation and
experimentation. The role of innovation management became essential to ensuring the success of the experiment. In addition, Steen and Tuurnas (2018) have noted the important role of managers in introducing co-creation in social and healthcare settings. In addition, they pointed out that professionals have little motivation to co-create since there is no evidence of its impact. However, the study from this dissertation showed that the professionals had a positive attitude toward co-creation, but they did not have the capabilities needed to include users in the process, and thus it ultimately failed. This also points out the nature of innovation and that innovation can fail. The dissertation confirmed previous notions by Osborne et al. (2020) that failure in innovation in the public sector is something that is not discussed sufficiently to promote learning. Failure should be seriously and constructively discussed to make it an asset for future development activities.

In addition to previous studies, this study stressed the importance of the context, which may vary inside the social and healthcare sector. The specific circumstances of the user's group should be understood. This also highlights the importance of the user's role (as described in PSL) in the process: the service offering should be designed based on the users’ needs and the capabilities of service co-production and co-creation. For example, Fox et al. (2020) point out that vulnerable service users may require supportive mentoring to co-create. This dissertation agrees with research done by Osborne and Strokosch (2013) and Osborne (2018) that the value can be seen to be created only when users use the public service offering and when the offering interacts with the user’s life experiences. The study presented in Papers 1 and 2 focused more on developing organizational processes than on developing services where the users were at the center. The failure of the development was linked to top-down management that did not include real co-creation, and the aim of the development was not user-centric. This dissertation highlights the need to design development processes based on users and their expectations and needs.

As presented in the theoretical part of this dissertation, transition pathways to change can be various in nature, and they can change during the transition. There might be incremental development following the transformation of the system, or the pathway may change to a reconfiguration of the system (e.g., Geels et al., 2016). Nonetheless, there are constant changes in the regime as it tries to answer the landscape pressure and niches provide innovations that can change the system. However, the transition
to the new system usually takes a long time, and there is a need to coordinate actions. The continuity of policy actions, as well as the continuity of funding, was highlighted in the results of the study. Fleming and Osborne (2019) and Vanleene (2015) made similar observations of limited impact through the discontinuity of policy actions. Funding is commonly linked to policy actions, and the discontinuity in development acts and funding has a significant impact on the possibility of developing services based on co-creation. It affects the motivation of professionals and managers to create a balanced development process. This dissertation confirms previous notions that long-term policy should be emphasized in policy action that aims toward the co-creation of services. As noted by Ashford and Hall (2015) and Schot and Geels (2008), experimentation should always be linked to other policy instruments to modulate ongoing transitions.

The long-term policy also means that transformative and paradigmatic changes may take several decades, and policymakers need to acknowledge this. However, this does not mean that experimentation does not create changes, but the impacts of these changes have been difficult to demonstrate. Park (2020) has noted that the emphasis of evaluating effectiveness based on economic value has reduced the interest in co-creating social and healthcare services. In addition, Voorberg et al. (2015) have pointed out the need to clearly demonstrate the benefits of co-creating. In this respect, the results from the dissertation pointed out the need to develop evaluation methods to grasp the impacts of experiments and how they contribute to the transition. This dissertation has introduced the development of a tool for policymakers to estimate the impacts of different policy options. Concrete methods or tools that can help in policy decision-making toward achieving a sustainable society are seen in transition studies as an important target (Köhler et al., 2019). This dissertation provides an example of the development process of a policy tool aiming to promote change.

Systemic change also requires that the experiments be scaled to make changes in the system. It is noted that experiments are the seeds of change, but there are many obstacles hindering their success, as presented in this dissertation. Transition studies have noted that experiments need to become something more in the temporal, spatial, and structural sense (Sengers et al., 2020). They also need to be more embedded in the current system. For example, Kanger et al. (2019) have noted that
diffusion and scaling innovations require the simultaneous construction of a broader socio-technical system, meaning complementary changes on multiple dimensions. The study presented in Papers 1 and 2 pointed out that there were no concrete plans to scale the experiment up, even though it was a part of a national experiment. This highlights the characteristics of social and healthcare where innovations remain local since there is no motivation to scale them up to other regions. In addition, scaling innovations up for other sectors inside the social and healthcare sector is problematic since there are barriers between professions and professionals.

Digitalization and the use of digital tools were identified as a systemic change needed for the transition toward the use of co-creation of services. The study revealed that the utilization and development of these tools are tightly linked to other systemic changes. Utilizing these tools requires sufficient resources, training of professionals and users, and sufficient innovation management skills. This highlights the interconnective and systemic aspects of these identified changes. To summarize, there has been a critique that the previous research in public policymaking has focused mostly on describing examples of user involvement in public service production and has shed light on the facilitators and barriers in effective co-production (e.g., Go Jefferies et al., 2019). One of the main contributions this dissertation has provided to the literature on public policymaking (and service management) is that the development of public social and healthcare services should be viewed from a systemic perspective, and change should be understood as a constellation of different changes in the system.

However, it needs to be clarified that the idea of simultaneous development of organizations, technologies, services, and multiple network relationships is not new in the area of public policy research and has been noted before by Gallouj (1994, 2002), Windrum and García Goñi (2008), Harrisson et al. (2010), and Rubalcaba et al. (2011), for example. Nonetheless, this dissertation has tried to clarify what systemic changes are and how they come about. For this, the dissertation has used literature from transition studies. Using a theoretical framework from transition studies can provide public policy research with new insight into how to promote the development of co-created services.
Changes in technologies or in the structures (as in the social and healthcare reform in Finland) are important systemic aspects of the change, but they do not alone change the system where services are co-created. The social and healthcare field has been studied in the TM literature to some extent, and it has mostly focused on TM experiments (e.g., Van den Bosch & Neuteboom, 2017). Social and healthcare innovations are co-created due to their intangible nature, and thus co-created service innovations can be assumed to have a major role in transition. The research literature from service management (e.g., Osborne & Strokosch, 2013) has stressed that users should be the center of attention when developing services.

As noted, PSL sees that service users create value through their interaction with public services and that value is created only when the users use the service offering and when that offering interacts with their life experiences (Osborne, 2018). Research focusing on the users in transition studies has only recently commenced (Köhler et al., 2019). Some studies have investigated the user’s role. For example, Köhler et al. (2019) stated that the understanding of users has shifted from passive to active players in sociotechnical change. In addition, Avelino and Wittmayer (2016) pointed out that it is not just the question of giving more power to the user or customers; the question should be considered more broadly. There are different kinds of power at different points in time and different roles of actors. With the logic of PSL, the foundation of the service lies within the service user, and the PSOs are the ones that should be added to the equations as co-creators of service (Osborne, 2018). This perspective can provide new ideas to TM and SNM on promoting change. The users should not be just invited guests but as the source of change. If the pursued transition is to grant more power to social and healthcare service users in the Finnish social and healthcare sector, the change should be viewed from the user’s perspective and how they can create value in a new setting.

The transition toward using co-creation in service production is a learning process, as described earlier. Klijn and Koppenjan (2014) pointed out that, to solve wicked problems, a joint frame of reference and a shared meaning of the solution is needed. Societal embedding of innovation aims to create this understanding and thus double-loop learning. This dissertation has introduced a development process in which double-loop learning is enhanced through a gamified solution. Learning is promoted by providing understanding to different actors of the systemic nature of change.
Moreover, the vision pathway toward the prevention of T2D, as presented in Paper 4, aimed to produce a systemic understanding of a complex change. Furthermore, it presented the development of a tool for policymakers to assess the impacts of policy actions. These examples can give transition studies new insights into how to steer and promote change in a real context, which is seen as an important aim in transition studies (Köhler et al., 2019).

6.4 Fulfilling the scientific criteria and limitations of the study

This dissertation has its ontological foundation in a socio-constructivist approach where knowledge is seen to be socially constructed in a complex interaction between people (e.g., Patton, 2002; Schwandt, 2003). Epistemologically, it follows abductive reasoning and uses a triangulation of approaches. It is mainly qualitative but contains quantitative elements to support policymaking. Case studies have been presented to create an understanding of the development of services in the social and healthcare sector, and action research has provided an understanding of the use of transition studies to promote change. The data were acquired from semi-structured interviews, workshops, documents, and economic decision modeling. To evaluate the quality and credibility of this research, there is a need to clearly demonstrate how the evaluation has been carried out, what the criteria are, and why these criteria have been chosen. These questions and the evaluation of the research are discussed next.

Yadav (2021) sees that it is not feasible to set a single specific set of quality criteria because of the diversity of different paradigms and disciplines in qualitative research. The philosophical underpinnings and theoretical orientation of the research affect how the quality and credibility of qualitative research need to be assessed and what the criteria should be (Patton, 2015; Yadav, 2021). As the ontological foundation in this dissertation is on socio-constructivism, the traditional criteria that are based on positivist ontologies are not suitable for evaluating the quality of the study. Dubois and Gadde (2014) have criticized the commonly used research evaluation methods of validity, reliability, and generalizability, as they are suited mostly for quantitative methods. They also see that evaluation methods developed to suit the characteristics of qualitative methods are still closely related to positivistic research ideals. For
example, triangulation is suggested (Lincoln & Guba, 1985) as a method to cross-check the data to secure a true picture of the studied phenomenon and not as a means for providing complementary aspects.

Patton (2015) has proposed four elements that are suitable for evaluating qualitative research and are compatible with the ontological foundation of this dissertation. These elements are systematic and in-depth fieldwork, systematic and conscientious analysis of the data, the credibility of the researcher, and philosophical and ontological beliefs. These elements were used to evaluate the quality of this dissertation.

The philosophical and ontological beliefs of this dissertation are presented first. As noted, these are based on a socio-constructivist approach where knowledge is seen to be socially constructed (Patton, 2002, 2015; Schwandt, 2003). The socio-constructivist research paradigm corresponds well to the theoretical approaches of service management and transition studies used in this study. The service management literature has moved toward ontologies that highlight the social aspects of constructing reality (Saarijärvi et al., 2017). Edvardsson et al. (2011) and Edvardsson and Tronvoll (2013) have argued that social constructivism can be used to better understand the guiding principles that enable users to co-create value. On the other hand, transition studies and the core conceptual models originate from research paradigms that highlight social aspects in the system and try to understand it from a constructivist point of view (Geels, 2010; Rip, 1992; Rip & Kemp, 1998; Schot, 1992).

The data for this dissertation has been collected from various sources, and it has utilized a triangulation of approaches to generate an understanding of the studied phenomenon. This dissertation has combined qualitative and quantitative methods to understand the possibilities for co-creation and how to utilize transition methods to promote change. In addition, a triangulation of approaches has been used by combining theories from public policy research and transition studies and in the research strategy by using case studies and action research. The data acquisition in the case studies and in the action research was carried out through interviews, focus-group interviews, documents, and workshops. These are presented in more detail in Section 4.1.5 and in the papers to give detailed information on the data acquisition.
In total, 78 semi-structured interviews and 2 workshops gave a good understanding of the studied phenomenon. However, as understood in the socio-constructive approach, case study research provides a model or description of the co-constructed reality, not a reality itself (e.g., Dubois & Gibbert, 2010).

The in-depth data collected from the case studies and from the action research were analyzed using content analysis. The aim was to create a holistic, systematic, and thorough understanding of the research topic. This dissertation followed abductive reasoning, which can be seen as an approach that starts with a puzzle and then tries to explain it. This requires back-and-forth engagement with the social world and the literature (Dubois & Gibbert, 2010; Saunders et al., 2016). It also highlights the continuous dialogue between the data and the researcher’s pre-understanding that creates an understanding of the studied phenomenon. As social constructivism points out, reality needs to be interpreted, and the researchers built this understanding together with individuals who participated in the research. With this in mind, the credibility of the researcher can be evaluated. The new understanding that this dissertation has produced is an interpretation that has been constructed together with the researcher and the individuals who participated in the study (see, e.g., Charmaz, 2014). It can be argued that, if another researcher conducted the same research, the results should be the same. However, in qualitative research, different researchers have unique pre-understandings of the context based on their previous knowledge, and they may focus on different topics. This highlights the need for an open and detailed description of the research process and how the researcher has drawn the conclusions in the dissertation. In addition, when evaluating the credibility of the researcher, it should be kept in mind that the construction of new knowledge has been produced together with the coauthors of the papers and with the research community. All of these papers have been presented at scientific conferences to get feedback on the research and its conclusions. Based on the feedback, corrections and modifications have been made.

However, it should be acknowledged that this dissertation has limitations. Dubois and Gibbert (2010) note that, when studying complex phenomena, there is a risk of increasing the complexity and thus the transparency of the research decreases. Transparency here refers to reducing the level of complexity in the research and walking the reader through the various stages of the arguments in the study to draw
logical and reasonable conclusions. In this dissertation, this is visible through the context selection examining the changes in the social and healthcare sector and by limiting the conclusion only to this sector (instead of arguing the changes in the public sector as a whole). There has also been criticism toward case studies, as they have been seen to be able to only generate hypotheses and the results cannot be generalized as understood in a positivist research paradigm. However, the generalization of qualitative research results should be understood from a different viewpoint. Gummesson (2000) has argued that the aim of qualitative social studies is not to discover the ultimate “truth.” Furthermore, the research conditions are rarely subject to the same control as in the natural sciences, and thus new studies may create different perceptions. With these limitations in mind, qualitative research may not produce results that can be generalized as understood in positivist science. Nonetheless, they create an understanding of the studied phenomenon as described in socio-constructivism.

Another limitation of this study is the lack of user participation in the empirical part of the dissertation. Even though one of the main contributions of this study is that users need to be involved in service development processes, the empirical studies did not succeed in this objective. There are two main reasons for the lack of user participation in the case studies. First, the case studies presented in Papers 1 and 2 aimed to include users in the research process. However, as the users did not participate, even in the studied development process, it became impossible to get them to participate in the research process. Second, including users in the research process in the social and healthcare field is dependent on the acceptance and active cooperation of social and healthcare professionals. Privacy issues of the users are an area of high concern in the social and healthcare sector, and researchers can only invite users to participate through professionals. This also relates to the issue of what the capabilities of the different users are when it comes to participating in co-creation. Getting users to participate would have required strong support from social and healthcare professionals. What was missing were the users’ own thoughts on why the experiment did not succeed and what they would have done differently. Some of these thoughts are presented by professionals, but naturally, they are their interpretation. These are important notions and would have been of benefit to the conclusions on the possibilities for promoting co-creation in the social and healthcare sector.
Another question is user participation in the research studies based on action research. In the study presented in Paper 3, the users participated in a development project but were not involved in the research project. In addition, in this case, the users could only be contacted through social and healthcare professionals who considered that the research focused on organizational development and that the participation of users in the project was not necessary. The study in Paper 4 focused on visualizing the change in the social and healthcare system toward the prevention of T2D. In this case, the problem became of interest to citizens. It is difficult for researchers to try to involve users (or citizens) in a research project where the objectives are at the national level. The users did not see how participation would benefit them. Nonetheless, the lack of participation of customers is a pitfall of this study and should be considered and confirmed early on in the study in the future.

6.5 Suggestions for further research

This dissertation has studied whether the use of co-creation could reform Finnish social and healthcare services. The change is not easy due to the complexity of the social and healthcare system. However, this dissertation has argued that the system can be reformed, but there is a need for systemic changes to utilize the potential of co-creation. The required systemic changes have been identified from the previous literature, and new knowledge has been produced based on the presented empirical studies. In addition, transition studies are examined to determine whether they can be used to promote change, and empirical cases have provided new insights into how to utilize the transition framework to promote systemic change. Nonetheless, more research is needed to understand the mechanisms of change and the action needed to promote transition. Next, future research needs that have been noted based on this dissertation are presented.

As discussed earlier, there is a need for transition studies to provide a means to promote transition (Köhler et al., 2019). TM and SNM are tools to initiate and catalyze transition, but more actions and further research are needed. The MLP can be utilized to understand the systemic aspects of change, but policymakers need concrete tools to promote change. More research is needed to study what kinds of tools policymakers could make use of for systemic changes. In addition, estimating
the impacts of policy action is something that has been developed in this dissertation but requires more attention. This is related to the more comprehensive need to include modern evaluation and impact assessment in transition studies. Since transitions usually take decades, it is important to see the impacts of different initiatives and link them to the wider transition.

Although this learning and evaluation has been acknowledged in TM and SNM, there is a need to develop methods that also take service innovations into account. In public service research, Osborne (2018) has noted that, when the perspective is on value co-creation as understood in PSL, the focus of evaluating public services shifts from measuring the performance of public sector organizations to producing value as a key metric. This is an interesting notion that should be studied further, especially how the value can be evaluated and how its impacts can be used to promote transition. In this context, the research results from Avelino and Wittmayer (2016), who highlight the different roles (e.g., consumer, taxpayer, family member) that users can have in transition processes, are interesting and should be acknowledged. However, this dissertation also noted that getting social and healthcare users to participate in research studies is not always easy. Even though the user’s role in research, and especially in development projects, should be emphasized, the reality of promoting user participation requires more attention.

Systemic change is based on landscape pressure, dysfunctions at the regime level, and innovative experiments at the niche level. Niche innovations are the seeds of change, but, as discussed, they have had problems transforming the social and healthcare system. Sengers et al. (2020) noted that innovations and experiments need to become something more in the temporal, spatial, and structural sense. Diffusion and scaling up niche innovations are at the heart of transition studies, but they have primarily focused on technological innovations. Even though the social and healthcare sector has received some attention in transition studies and has been the focus of this dissertation, it can be seen that there is still a gap in the knowledge. There is a need to better understand the different types of innovations in transitions and how they can be scaled up. The intangible nature of social and healthcare services, where they are produced and consumed simultaneously, should be studied more specifically. The logic behind co-created public service innovations in social and healthcare differs from scaling up technological innovations. Besides
technological innovations, studying transitions from the social and healthcare perspective should focus on service innovations and co-creation processes. In this context, the user’s role in the transition is highlighted.

This dissertation also highlighted the need for a long-term policy toward co-creating social and healthcare services in Finland. It has been argued that the MLP can provide an understanding of the complex system and the needed changes at different levels and how they interact with each other. Furthermore, TM and SNM can provide tools to promote change. However, more research is needed on how transition studies should be integrated into the policy system in Finland. In addition, the interlinkages between transition studies and mission-oriented innovation policy and the use of policy mixes should be studied further.

6.6 Managerial and policy implications

This dissertation suggests that, to promote a transition toward co-created social and healthcare services in Finland, ideas and methods from the transition literature are helpful. Experiments are the seeds of change, and innovations should be systemic by nature, which has proven difficult to implement. These difficulties have been presented in the dissertation by exploring the recent literature and through an empirical study. For systemic changes, the dissertation has categorized four main themes that also include concrete changes that are required. These changes are presented in Figure 9 and can also be seen as managerial and policy implications.

MLP can help structure the changes that are required for the change, and TM and SNM offer tools to promote the transition, as described in Papers 3 and 4. However, in many cases, innovations need to be adjusted to the local conditions. Systemic change requires that innovations do not remain local, but they need to break through with the existing regime. Innovations and experiments need to become something more in the temporal, spatial, and structural sense (Sengers et al., 2020). They also need to be more embedded in the current system.

Geels and Turnheim (2022) have noted that even though countries have expressed commitments to net-zero targets concerning climate change, none have presented a
sector-specific transition pathway or specific policies to achieve these targets. The same applies in the social and healthcare sector in Finland, where problems have been recognized, but what is missing is a plan or a pathway to answer these issues. The paradigm of NPG has proposed that the role of the state is to steer the actions that happen in a complex system and support the creation of innovations through enabling legislation and providing resources for experimentation (Hartley, 2005; Newman & Clarke, 2009).

However, as discussed earlier (e.g., Lovell, 2007), governments are deeply embedded within the current socio-technical system, and therefore they have difficulties introducing radical innovations needed to change the system. Loorbach and Rotmans (2010) pointed out this in a good way by arguing that the regime will always fight back, and transition processes are never easy. Furthermore, well-planned and long-term management is rare. It can be agreed with the current research line (e.g., Geels, 2018a, 2018b) that the transition of a system needs to be viewed from a broader perspective. In addition, the new rise of mission-oriented innovation policy (Wanzenböck et al., 2020), which pays attention to the wickedness of societal challenges, is welcomed. It is unlikely that the Finnish social and healthcare system will be transformed by a single innovation. Systemic change is a long-lasting process that takes decades. However, by creating a shared vision of the future, accepting that change does not happen quickly; utilizing experiments and learning, transition is possible. However, what is needed is a long-term perspective with mixed policy actions that aim to renew the sector through multiple system innovations.

MLP can be used to understand the systemic changes that are needed to link together individual experiments toward system change. TM can provide useful tools to create long-term policies from a nationwide perspective that also focuses on involving stakeholders in the creation of services that are based on service users as value creators. TM and SNM are managerial innovations invented in the Netherlands, and thus they need to be modified to fit the Finnish system. There were attempts to utilize socio-technical change theories and methods in Finland in the early 2000s. However, at that point, it did not affect policymaking in the Finnish context. Heiskanen et al. (2009) studied the use of TM and SNM in Finland and questioned whether there were assumptions in the model that were not compatible with the Finnish system. Nonetheless, the societal embedding of innovation is an example of
a Finnish model that has similar basic assumptions of systemic change to the Dutch model. In addition, policymaking in Finland has changed toward the ideas in NPG where cooperation is highlighted, and mission-oriented innovation policy has gained ground. As the policy culture is changing in Finland, there could also be a possibility of more successfully utilizing the principles from TM and SNM in the Finnish context. The use of TM together with SNM could bring a long-term perspective to policy activities, which has been highlighted in the results of this dissertation. This dissertation claims based on these results that, by focusing more on systemic aspects of innovation and change and by utilizing the principles of TM and SNM, it is possible to better answer the grand challenges in the Finnish social and healthcare system and develop co-created services.
REFERENCES


Kuhlmann, S., & Rip, A. (2014). *The challenge of addressing Grand Challenges. A think piece on how innovation can be driven towards the “Grand Challenges” as defined under the*


Martiskainen, M., & Kivimaa, P. (2019). Role of knowledge and policies as drivers for low-energy housing: Case studies from the United Kingdom. *Journal of*


PUBLICATIONS


Child and family services in the digital era. New opportunities for multi-professional collaboration and the empowerment of users

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RÉSUMÉ – Cet article est consacré au travail multi-professionnel et à la participation des usagers dans les services sociaux, sous l’angle de l’intégration et de la collaboration. Les changements dans les paradigmes de service public, dans le travail professionnel et dans le rôle des usagers en constituent les bases théoriques. L’investigation empirique examine les services à l’enfance et à la famille, traditionnellement dispersés au sein des services sociaux et de santé, mais qui sont rassemblés ici dans un “modèle intégré de bien-être”.

MOTS-CLÉS – Travail multi-professionnel, participation de l’usager, services sociaux, services publics, plateforme numérique

ABSTRACT – This article studies multi-professional work and user participation in social services from the viewpoints of integration and collaboration. The changes in the public service paradigms, in the professional work and in the role of users form the theoretical lenses. The empirical study examines children and family services. Traditionally these services have been scattered in social and health care, but in the studied case they have been gathered together into an ‘integrated model of wellbeing’.

KEYWORDS – Multi-professional work, user participation, social services, public services, digital platform
INTRODUCTION

Securing the welfare of population is one of today’s grand challenges, a characteristic of which are increasing service needs and diminishing financial resources. In Western countries, the service needs have grown due to the ageing of population (Bloom et al., 2015) and to the persistence of many social problems: unemployment, economic inequality, alcohol and drug abuse, etc. (Mossakowski, 2008). To some extent, the problems have become more ‘wicked’ (Blackman et al., 2006), and accumulate among certain individuals and households that need several different services simultaneously (Korpi et al., 2007). Both governmental authorities and local policy makers aim to develop intervention strategies and reconstruct their responses to these problems to maintain the basis of the welfare state (Harrisson et al., 2010).
In the intervention strategies, the improvement of access and continuity of services is an important goal. Integration across sectoral and organizational borders and collaboration between the service providers and users have been central means to achieve this goal (Winters et al., 2016). Empowerment of citizens to do their best in promoting the conditions of their welfare is another new focus and part of the efforts to prevent problems in advance. It has changed the view of the service user as a passive recipient and highlights the co-creation of service value (Alves, 2013; McColl-Kennedy et al., 2012). Integration and collaboration have also been suggested to promote efficiency and effectiveness, which are pursued as an answer to the problem of scarce resources and have favored the adoption of evidence-based approaches to the development of welfare services (Sanderson, 2002).

In the welfare sector, new practices have been examined and implemented first and foremost in healthcare. Here, the integrated care models have been developed systematically to include patient support, structured follow-up and case management, multi-professional teams and clinical pathways, and the education of professionals (Ouwens et al., 2005). Also, the combination of health and social care has become common in both research and practice (Cameron et al., 2014). However, this discussion has been at a general level and has not concerned the integration of subsectors of social care (Fisher and Elnitsky, 2012). Reasons are probably country-specific variations in the field as well as its dispersed nature. Social care includes extensive service wholes promoting and maintaining the functional capacity, social wellbeing, safety, and inclusion of individuals, families and communities (Jensen, 2008).

Thus, we have identified a research gap concerning the integration of different services linked to social care. In the present article, we aim to narrow this gap by examining first the central theoretical issues that influence the opportunities, benefits and challenges of the integration of social care. Thereafter, we describe results from an empirical study that we have carried out in Finland in a sub-area of these services: social care for children and families. This area is especially important from the viewpoint of problem prevention: early support helps to avoid the development of ‘problem career’ and the ‘inheriting’ of problems to the next generation (Korpi et al., 2007). Child and family services are also an illustrative example of the dispersion of social care: there are
multiple services requiring different expertise and professional practice, and part of these services are tightly linked to healthcare and schools.

The integration of child and family services was already highlighted twenty years ago when publicly supported programs in this area started to develop actively (Knitzer, 1997). Initiatives of cross-system collaboration and early intervention spread in different sub-domains of these services. The transformation was aimed to concern responses to the needs of children and families, professional practices, and the ways in which services were organized. However, the actual changes have not been as notable as was desired. The lack of coordinated multi-agency working in children’s services has been highlighted in many studies (Percy-Smith, 2006; Sloper, 2004; Watson et al., 2006). It is also unclear to which extent these services have adopted the new practices of user involvement and empowerment – actively applied in healthcare. As regards the most recent development, very little is known about the utilization of digital tools as a supporting device or platform in the integration of social care and in the collaborative practices in this area.

We pose the following two research questions to guide our study: 1) What are central issues in the integration of child and family services across sub-sectors and professions and how could digital tools promote this integration? 2) What kind of practices of user involvement and empowerment can be found in child and family services and how could digital tools promote these practices?

Our theoretical analysis is structured to provide basis for the empirical examination of these research questions. It reviews literature on professions that have traditionally been strong in welfare services and built on a specific discipline and expertise (Currie et al., 2012). It also summarizes research concerning the participation of users in the provision of services aimed at helping them. We mainly apply the concept of ‘user’ as we consider it to describe best the active and long-lasting role of the service ‘recipient’. However, in some contexts describing the collective nature of welfare services, the concept of ‘citizen’ is more natural. We also use the concept of ‘customer’: in the reviews of studies with this focus and in the direct quotes of our interviewees.

The perspectives applied in the research of welfare integration and the respective cross-sectoral collaboration have usually been divided into macro, meso and micro levels. Here, the macro perspective has
represented the viewpoint of the society, the meso perspective the organizational and professional levels, and the micro perspective the everyday practice (Fisher and Elnitsky, 2012; Winters et al., 2016). Our study is mainly positioned at the meso and micro levels. However, in the theoretical part, we also briefly touch the macro level: we start our literature analysis from the paradigmatic development of service views in the welfare context. This is because we consider it important to realize that the practices to be discussed mean profound changes and it is not surprising if the novelties do not gain ground very rapidly.

We have structured our paper as follows. In the first section, we present the theoretical background of our study. In the second section, we describe the context of our empirical study and the methods of data collection and analysis. The third section summarizes the results, and the last section includes the concluding discussion.

I. THEORETICAL BACKGROUND

This section provides the theoretical basis for the analysis of our research questions: it reviews central issues linked to cross-professional work and the involvement and empowerment of service users. In order to frame these questions, the section starts with a short analysis of the paradigmatic views concerning welfare services.

I.1 THREE PARADIGMATIC VIEWS ON WELFARE SERVICES

The development of welfare services is tightly linked to the development of the public sector – in most countries, these services are at least partially public activities and publicly regulated. Thus, it is reasonable to suppose that the long term trends in welfare services are interlinked with the way in which the tasks of the public sector have been understood. Three paradigmatic views have been generally identified: traditional public administration, New Public Management (NPM), and network governance. Table 1 summarizes their central characteristics based on Hartley (2005). The original presentation has been slightly modified to highlight the topic of this article.
These paradigms are based on particular assumptions about human needs and societal challenges and provide different approaches to the generation, adoption and implementation of welfare services. They include diverse understandings of the means to answer the needs and of the roles of various actors to tackle the challenges (Hartley, 2005; Lévesque, 2013; Moore and Hartley, 2008).

Traditionally, the public sector was understood in terms of authoritative and rule-based governance; a centralized, bureaucratic and hierarchic order was typical. The provision of necessary services was a central task of the public sector; services were seen as ‘public good’. The service needs were defined by professional experts, and the enabling technologies were discipline-based (e.g. medical technology). Citizens were given the role of ‘state subordinates’ and ‘service receivers’ (Torfing and Triantafillou, 2013). Services were often standardized as the basic needs were considered homogenous (Langergaard, 2011). This kind of paradigm worked quite well as long as the context was fairly stable. Along with the increasing pace of change and insecure developments

in the society, the rigidity and inefficiency of the paradigm became evident and led to the introduction of ‘New Public Management (NPM)’, which started to gain foothold in the Western world more than twenty years ago.

The basic idea of NPM was to apply market mechanisms in the public context: business-type management and performance focus exemplify the aims (Langergaard, 2011). In an increasingly competitive environment, contracting out and partnerships with private companies were considered important. A core change was handling the citizens as customers who have the right to require high service quality. Free choice and customer satisfaction became central slogans. In addition to expert assessment, demand was emphasized as an indication of service needs, which were no more regarded as homogenous but individual (Hartley, 2005; di Meglio, 2013; Windrum, 2008). In addition to disciplinary-based technologies, the technologies of industrial management – lean processes – were adopted to pursue the efficiency goals (Pollitt, 1993; Tummers, 2013). The benefits of NPM are indisputable in terms of customer influence. On the other hand, the latest development has brought to the fore phenomena that have again revealed differences between the public and private sectors. As a result, a third paradigm ‘Network Governance’ has been emerging.

Network Governance broadens the perspective from the provider-customer dyad to multi-directional relationships and partnerships: to an open dialogue between various actors (Langergaard, 2011; Newman and Clarke, 2009). It argues that market imitation cannot solve the issues of increasing societal fragmentation, complexity and dynamism, but new forms of non-hierarchical, decentralized governance mechanisms are needed in the public sector (Moore and Hartley, 2008; Rhodes, 1997; Sørensen and Torfing, 2007; Voß et al., 2006). Co-creation of service value and co-production of concrete service processes are important phenomena that reveal the deeply contextual nature of human needs – the needs are diverse but not atomistic. Expertise is too narrow a means and demand is too general and temporary an indicator to assess these needs. A more suitable approach is interactive processes in which empowered citizens play a central role. Correspondingly, the discipline-based and lean technologies have to be supplemented with user-driven processes (Sørensen, 2002).
Currently, Network Governance evolves in parallel with market imitation and the still surviving elements of bureaucracy (Newman and Clarke, 2009). In welfare services, there are increasingly horizontally organized service systems that cross professional and organizational borders and encourage bottom-up activity, but there are also sectorial ‘silos’ and centrally managed systems with a top-down order. One area in which the development shows contradictory features and has caused notable disputes is the nature of professional work. New Public Management has aimed to introduce a new settlement of relationships between the citizen and the state and between management, political control and professional responsibilities (Clarke and Newman, 1997). This new settlement has gained ground to some extent but both the older forms and new trends create tensions in its implementation. In the following, we analyze these tensions in more detail in order to understand the framework conditions for the cross-professional work in child and family services.

1.2 CHANGING FORMS OF PROFESSIONALISM AND SOCIAL SERVICES AS PROFESSIONS

In welfare services, the role of professions has traditionally been strong; the status of professionals has been legitimized by scientific knowledge (Tummers, 2013). The privileged expertise going with this status has maintained a social distance between professionals and service users and made their collaboration difficult (Parker and Joel, 2013). The basis of expertise has, however, been a target of lively discussion during the last decades. A key dichotomy has been between ‘organizational professionalism’ and ‘occupational professionalism’ (Evetts, 2003). The former is the traditional form of professionalism, emphasizing the self-regulation of work by professional groups, whose expertise places them in a position to act best in the interests of service users. The latter is the managerialist version of professionalism, being associated with the principles of New Public Management (Hood, 1991).

Managerial professionalism posits new requirements to professionals: besides the mastering of the disciplinary contents, they are expected to be entrepreneurial, creative, and efficient lifelong learners and team workers (Dent and Whitehead, 2002). They are expected to implement various policy programs whose practical content may be difficult to
identify (Tummers et al., 2009). Both resistance and acceptance have been perceived as a reaction. A natural reason for resistance is the concern that the new practices threaten the autonomy of professionals. A commonly expressed fear is also the weakening of the basic values linked to professionalism (Evetts, 2011). On the other hand, it has been found that professionals may advance their own interests by capturing the reforms. Capitalizing on the opportunities afforded by NPM has been particularly visible in healthcare (Waring and Bishop, 2013).

It seems that neither of the two ideal forms of professionalism works as such in the reality, but they are combined into various hybrid forms (Skelcher and Smith, 2015). In recent research, the focus is moving to the identification of the ways in which professionalism is acted upon, and evolves over time (Tonkens et al., 2013). The embeddedness of organizing capability as a part of professional work has been highlighted in this context (Noordegraaf, 2015). Working together across professional groups is one area which represents an evolutionary adaptation of traditional professionalism and includes the acceptance of inter- and multi-professional approaches (Parker and Joel, 2013). As new services are increasingly co-created, there is a multiplicity of possible outcomes, i.e. hybrid forms between the extremes of professionalism (Fischer and Ferlie, 2013). The question is of the willingness of professionals to share their knowledge and of the ability to interpret it in different domains.

As mentioned above, social services do not form a homogenous entity. Here, the role of professionalism has been more ambivalent than in the sectors with a unifying disciplinary basis (e.g. healthcare). The complexities of social work practice and the diverse meanings associated with it are acknowledged in literature (Hutchings and Taylor, 2007). The lack of a distinctive knowledge base has been used to question whether social work is a profession. Social workers have never had the autonomy to define ‘private and public ills’ in the same way as the medical profession has defined diseases. Thus, the sector has adopted a looser approach to professionalism, even though a trajectory towards professional status and professional power has been recognizable to some extent (Parker and Joel, 2013).

Some researchers have argued that social work challenges both the traditional and managerial professionalism. It moves away from an exclusive, elitist and self-creating profession to one which focuses
on core values and working together with those who use its services (Parker and Joel, 2013). While the first part of the argumentation may be justified, the conclusion sounds idealistic and resembles the views of traditional professionals – just from a different angle. It bypasses the internal diversity of the sector: the sub-professions and specializations. Within these sub-professions, different cultures exist and include their own values, beliefs, attitudes, customs and behaviors (Hall, 2005). In order to fulfil their basic purpose, some professions must use authority for the best of their customers (e.g. child protection) while others can rely on a much more dialogical approach (e.g. preventive family counselling).

1.3 PARTICIPATION AND EMPOWERMENT OF THE SERVICE USERS

The co-production relationship has been highlighted as a fundamental characteristic of services (Sundbo and Gallouj, 2000). The user of a service is an active party in the service encounter as the provider of the necessary background information, and usually also as the carrier of some tasks. Correspondingly, the benefit of a service is not only based on the outcome, but the success of the process is crucial (Grönroos, 1990). The approach of service-dominant logic (S-D logic) has supplemented this view with the value co-creation perspective. The service provider cannot create value on behalf of the user because value is not inherent in a service. Before it can be realized, the service has to be used. The user integrates the input received from one provider with other resources received from other providers (Vargo and Lusch, 2004).

Managerial implications of co-production and value co-creation have been studied from different angles. Understanding the needs of users on the basis of systematic accumulation of feedback is an established approach. Both service improvement and expectation management have been implemented in order to increase customer satisfaction; the latter refers to aims at transforming fuzzy expectations more precise, implicit expectations more explicit, and unrealistic expectations more realistic (Ojasalo, 2001). In recent years, a deeper view has been pursued: service experience and social networks as the framework for this experience have been highlighted (Payne et al., 2008). The focus has been on the customer path both in the service encounter and outside it: in the customer’s own context (Bitner et al., 2008). Facilitation of the activities
that customers take on this path is considered important. Awareness of the central role of the customer is visible in the abundancy of concepts used to describe this role: collaboration, involvement, engagement and participation.

The perspectives of co-production and value co-creation are gaining ground in welfare services, too. In the public sector, where a great part of these services are produced, the role of citizenship comes to the picture and complicates the situation. Citizens are not only individuals but responsible members of a collective, and they are not always sovereign actors but restrained by existing structures, e.g. power structures (Rosenthal and Peccei, 2007). The rights and responsibilities of citizens differ from those of customers, which implies that also user participation and collaboration with users have specific characteristics in this context. However, both NPM and Network Governance highlight that citizens should be active partners in planning, creating and shaping the delivery of public services (Moore and Hartley, 2008).

‘Citizen empowerment’ has been a key concept in the analysis of participatory practices in the welfare context. WHO (1997) defines empowerment as a process through which citizens get greater control over the decision and actions affecting their health and wellbeing. In the background of this definition, there is a view that people are subjects and actors who have sufficient skills, understanding and self-efficacy to take the responsibility of their own health and well-being (Mäkinen, 2006). Citizen empowerment gives users the role of partners – a view that can be regarded as ‘revolutionary’ compared to the traditional paradigm of public services. Locating citizens in the middle of service-related decision-making improves democracy and encourages politicians and professionals to find new ways to interact with citizens (Bovaird, 2007).

The advancement of information technology and the creation of new digital applications have provided citizens with new capabilities and ways to participate and express themselves in the networked society. Thus, citizen empowerment through digital platforms has become a topical discourse (Mäkinen, 2006; Papastergiou et al., 2009; Samoocha et al., 2010; Webb et al., 2010). Research and development (R&D) in this area has been especially active in health care (Honka et al., 2011). The aim is not only to promote the use of technical facilities, but to
create a multi-stage process for better networking, communication and cooperation opportunities, and to increase the competence of citizens as influential participants in the society (Mäkinen, 2006).

Several studies indicate that digital empowerment is not only a goal but the empowerment of citizens can be accelerated with digital devices and applications (Papastergiou et al., 2009; Samoocha et al., 2010; Webb et al., 2010). Digital empowerment has helped in ‘setting citizens on the drivers’ seat’ so that they can manage their own wellbeing (Honka et al., 2011). The ways in which new digital services enrich participation include diversifying the information flows, increasing horizontal communication and opening new bridges to marginal or remote areas and people (Mäkinen, 2006).

On the other hand, researchers argue that the potential of service co-production is deficiently understood in the public context (Bovaird, 2007). A weak point is especially the collaborative process through digital platforms (Honka et al., 2011; Moore and Hartley, 2008). Digital tools and practices to support citizen participation are not developed and utilized sufficiently (Mäkinen, 2006). The reasons behind these problems are only partially known: their linkages to inefficient policies, to the service culture, and to the attitudes of professionals and users need more detailed studies. It is also unclear what are the concrete changes in the practical activities that would support in the best possible way both the actual partnership with citizens and the utilization of communication and interaction channels between citizens and professionals.

II. EMPIRICAL CONTEXT AND METHODOLOGY

Our empirical study analyzes an ‘experiment’ in which a middle-sized Finnish city (with 67 000 inhabitants) developed ‘an integrated model of wellbeing’ for child and family services. The development was part of a nation-wide project that aimed at promoting local experiments as an alternative to centralized planning in the renewal of public services. Based on a decision of the Finnish Parliament, cities and municipalities were given the possibility to experiment a selected new service practice.
for two years (2015-2016). The goal was to accelerate innovation in the public context and in this way to answer better the needs of citizens and empower them, enhance multi-actor collaboration, and reduce costs. This section presents the research context in more detail and describes the collection and analysis of the empirical data.

II.1 CONTEXT OF THE STUDY

In Finland, the development of social services is based on the model of ‘Nordic welfare state’ in which a broad social security and a strong role of the public sector are central characteristics (Kettunen, 2001). Cities and municipalities are the core actors in the delivery of social services. They are also responsible for the majority of health services, children’s daycare and primary schools. Based on the procurer-provider model, private companies can deliver some services but here, too, the public organizations define the nature, costs and quality of services (Kivisaari et al., 2013).

The ‘integrated model of wellbeing’ in our case was a life-cycle based total offering whose objective was to support multi-professional work and reinforce the citizens’ ability to take responsibility of their own wellbeing. The integration focused on the sector of social care (child protection and family counselling) but it also included the preventive and therapeutic services for this population in the neighboring sectors: daycare, primary schools and health care including child health care. In the core of the model was the use of a digital platform as a mutual information and communication channel between citizens and different professionals. Another important cornerstone was a ‘service plan’ to which both the citizens and the service providers commit themselves. It also aimed at empowering citizens to participate in planning the services targeted to them.

The development of integrated social services was not a totally new idea in our case city. Rather, the nation-wide experiment provided a natural continuation to the work which had started in 2008 and included a renewal of the organizational arrangement and customer processes in the services targeted to children and youth. The responsibility for the organization of these services was allocated to suburban level in the city; seven local suburbs were expected to promote service integration and user-based processes. This renewal included all services in daycare
and primary schools (i.e. not only social support), and it also included leisure services for young people (Mäensivu et al., 2017). In addition, the city had experience of integrated health care: cross-professional work, selfcare and digitalization were in use in its primary health centers when the corresponding effort started in social services (Määttä et al., 2014).

In the new experiment, integrated services were especially targeted to citizens who have multiple needs for social care and who therefore are in contact with different professionals from different sectors. The focus was on preventive services that can diminish problems whose afterward relieving requires much more resources. Four key processes were identified: early discussion about the concerns of citizens, high quality multi-professional collaboration, support to the parenthood (from pregnancy to adolescence), and the development of social skills of both parents and children. These processes were concretized into life-cycle based and integrated service products. Local differences were taken into account by involving representatives of both the city center and the suburbs in the development work. A management team including professionals from different sectors was established in each region to take care of the implementation of the new types of services; the appreciation of the views of grassroots employees was also encouraged.

A common service plan, which was a core idea in the experiment, aimed at collecting together the various plans that were made for the customer, each of them answering a specific need. In order to secure that the new holistic plan takes into account all these needs, a close collaboration was built between the different professionals and the customer. One professional within the multi-professional group was responsible for the compilation and the later updating of the integrated plan. He or she invited all other relevant professionals to this activity and to the respective implementation of the plan. An important element in the experiment was a digital platform which was established to facilitate the distribution of information: the professionals and the customer had access to common information. They could also update and complement the service plan that was made in the electronic form and located on the platform.
II.2 DATA COLLECTION AND ANALYSIS

We applied semi-structured interviews as our main source of data: the topics were decided beforehand but within them, the respondents were given a great deal of freedom (Bryman and Bell, 2011). The main topics of the interviews were: 1) the background of the multi-professional collaboration and its current stage in the child and family services, 2) the role of customers in the multi-professional service interaction, 3) the main elements of the new integrated model of wellbeing, 4) the aims of the new model, concerning the digital service plan in particular, and 5) the managerial challenges linked to the new service practice and to the change pursued.

We interviewed both city managers and the professionals involved in the development of the new model. We applied snowball sampling in the search for the interviewees: we interviewed first the manager of child and family services in our case city. Based on her suggestion, we thereafter invited other interviewees: 4 other managers and 18 professionals. The group consisted of two managers of educational services, the manager responsible for the development of the digital platform, and the manager responsible for the procurement of child and family services.

The interviews of the four managers were conducted individually. The professionals were interviewed in three groups, which included five to seven participants. The first group consisted of five professionals from child protection, family counselling, and prenatal and child health. In the second group, seven professionals represented specialist day care, pre-primary education and therapeutic services (speech and activity therapies). While these two groups were specifically compiled for the interviews, the third group collaborated on a more permanent basis: this group with six professionals was responsible for the evaluation of customers’ service needs. They represented family counselling, health services in primary education, day care, and team leaders of child and family services. As there were several representatives of the same profession in the group interviews, the citations of different respondents belonging to the same profession have been marked with A, B, C, etc. The interviews were carried out between October 2015 and February 2016.

We also used supplementary material in our study. The first source of this material were official documents. They included strategy documents
on the nation-wide initiative for local experiments, and descriptions and implementation plans provided by the city. The second source of supplementary material were our own studies that we had carried out earlier on the development of social services in the city suburbs (Mäensivu et al., 2017) and on the implementation of integrated primary care in the city’s health centers (Määttä et al., 2014). These studies, in which the second and third authors of this article had participated, provided us with important background material based on long-term observations and interviews.

The analysis and interpretation of the data was conducted in a dialog between theory and empirical findings. We did not use any computer-assisted coding tool, but several rounds of analysis were carried out to derive meanings from data and to reduce the amount of data (Huberman and Miles, 1994). While reading the interviews and the documentary material, we uncovered the most common and typical themes, and classified and structured them. Our aim was to create a holistic understanding of the research topic via systematic and thorough analysis of the interview responses. The quotations in the results sections illustrate the level at which extracts were picked from the material. The empirical observations were linked to the theoretical views of the article: the nature of welfare services, multi-professional collaboration, and the participation of users in service delivery. Finally, the analysis results were presented to the city representatives who participated in the study; for this purpose, a workshop was organized to validate the results and to acquire supplementary information.

III. RESEARCH RESULTS

This section presents the main results of our empirical study. It focuses first on the issues of integration in child and family services – issues that are tightly linked to the cross-sectoral and multi-professional collaboration. We start with the description of the general views on the collaborative culture in our case organization and analyze thereafter more specific views on the integrated service plan, on its technological
aspects (the digital platform), and on its implementation. Second, we present the results that are linked to the participation of service users. This analysis is divided to the issues of customer expectations, potential benefits, and the ways to empower citizens; here again, we also pay attention to the role of the digital platform.

III.1 INTEGRATING CHILD AND FAMILY SERVICES AND SUPPORTING THEM WITH A DIGITAL PLATFORM

The results revealed that the professionals participating in the change process had positive experiences about working with other professionals and they welcomed new possibilities in multi-professional practices. They wanted to break down organizational silos and to lower barriers between professionals and service users. However, the broad scope of the new model was seen challenging because there is an inherent difference between the ‘missions’ of social services and educational services. The latter (including primary and pre-primary education) are focused on teaching contents whereas the former (including daycare) focus on customers’ welfare in a holistic way. These differences make it difficult to set common goals despite a genuine will.

There were also doubts concerning the collaboration between social services and specialist health care due to the traditional division of labor and the power distribution between social and health sectors. These doubts were visible, for instance, in the prejudice that doctors in specialist care would not be willing to cooperate with social service professionals and participate in the use of the common service plan. However, the citation below shows that the situation was not that straightforward:

Two health care professionals in specialist care have been very excited. It has been a total surprise. [Representatives of] child protection and the hospital district have, for example, been very eager to initiate collaboration. However, the current legislation limits collaboration. Anyhow, the multi-professional collaboration has been seen as a good start also from the viewpoint of the professionals in specialist care. (Team leader of child and family services)

The interviewees considered that an important positive effect resulting from the new model and the related digital platform is the possibility to see information produced by the professionals of other sectors in common customer cases. An inadequate share of information had
caused difficulties, for example, when a child gets special support in
daycare and also needs therapeutic or child protection services. The lack
of common information ground had hampered the creation of an overall
picture of children’s situations and reduced possibilities to offer the best
possible services. Without a common platform, the only ones who can
combine information from various sources are service users, but they do
not usually know which pieces of this information are available to each
professional. Moreover, it may hinder dialogue between professionals
and professional and customers in the information delivery is only on
customers’ shoulders. The citation below confirms these problems:

I think that the parents assume or believe that we know all the customer
information. They do not realize that in every sector we have different infor-
mation systems and we do not have rights to use the information systems of
other sectors. Therefore, currently it is customers’ task to inform professionals
in other sub-sectors. If the customers do not pass their information, profes-
sionals should request them to do it. (Representative A of specialist daycare)

Another problem that the new model relieves is the change of the
individual professional providing the service to the customer; the fact
that the professional does not stay the same during the process causes
breaks in the information transfer. According to the interviewees, the
common service plan would help to manage situations in which a new
professional enters the multi-professional team. He or she can see in the
common plan, which issues have been discussed and which goals have
been set earlier by other professionals and the customer.

When we make a service plan for the customer and new professionals come
to the team, they can see all the information and the issues that have been
discussed and agreed earlier. (Representative A of therapeutic services)

Despite the positive attitude towards the model, the interviewees
described that the new digital tool came as a surprise to them. Preparation
of the renewal and development of the new digital platform were in the
hands of the city management. According to the interviews, the devel-
opment of the new service plan did not follow the principles of co-cre-
ation; only a few professionals participated in the development process.
Broader information was given only in three implementation sessions
arranged by the city. Also the dates of these sessions were informed very
late. Due to the tight timeline and professional priority on the customer work, only a few professionals were able to attend these sessions.

We got an invitation yesterday to meet next week’s Tuesday. We have arranged customer appointments two weeks ahead and it is very difficult to fix new times for the customers. You would need to call to customers and rearrange the meetings, which might have been cancelled and rearranged many times before. Sometimes I feel that there is another project, which forces me to abandon my primary work. (Representative A of prenatal and child health)

Also more generally, the professionals considered that the experiment had generated new tasks and responsibilities that challenged the ordinary work. According to them, ‘a never-ending flow of new tasks’ decreases the face to face time with customers. In the long run, the increase of the workflow may cause well-being problems.

The main problem is that there are always more and more responsibilities even though your workload is already full. New tasks are on the top of the former responsibilities. Nothing is taken away. The key question is, how long you can increase the workload of professionals. Do we think that they can cope with all these new tasks and responsibilities? (Representative B of specialist daycare)

The professionals were also concerned about the experimental nature of the new model. They felt that the new model was again one experiment which will be tested and piloted in the city but will not become a part of their daily practices. Thus, they had difficulties in motivating themselves to participate actively in the development process. Notably, this was not the only development project facing this challenge as the following quotation of an interviewee from the pre-primary education shows. She highlighted problems in identifying which development projects are genuinely impactful in practice and therefore worthy to participate:

There are many experiments starting; in the end, they do not affect any practices. Often these initiatives even stop before they have properly started… Initiatives come and go, come and go. And when you have lot of work, you can continue without realizing the effects of these experiments. It is very difficult to know in which experiments you should take part. Quite often when I have tried to participate and wanted to find out what is the idea in an initiative, the experiment has disappeared meanwhile. (Representative A of pre-primary education)
Deficiencies of the technological platform were described as a particularly difficult issue in the development of the new model. The interviewees also highlighted that the introduction of new digital platforms as such is time-consuming; it requires learning and patience both from the service providers and from the users. This time is taken away from the face-to-face customer contacts which, anyhow, are the most important part of the service. In the present case, an additional problem emerged from the fact that the platform had been developed separately and hence it was not connected to the other ICT platforms that the professionals used. Representative (A) of pre-primary education summarized the feelings of many others by saying ‘separate and incompatible digital platforms lay extra burden to professionals’.

In the implementation of the new tool, there were also many minor technical problems which had negative impact on the reputation of the renewal according to the interviewees. For example, the use of the platform required identification and all professionals did not have necessary tools for it. The interviewees highlighted that for ensuring the commitment of practitioners, it is important that the digital tools work without problems right from the beginning. They also remarked that the developers of digital tools often forget that some workplaces may operate without required digital equipment. This is a typical situation in daycare homes, for example. It is not self-evident either that all service users (e.g. immigrants) have computers. Mistrust towards new technology can be a problem, too, including fears about the disappearance of information.

Our study revealed that the expectations concerning the integrated model of wellbeing were very different between the managers and the professionals. The managers assumed that the new model would improve customer-centricity in social services and the digital tool would make the work of professionals easier because it facilitates the access to information. However, it turned out that even the basics of the renewal were poorly known among the professionals. There were misunderstandings and the professionals did not know how the digital tool should be used in practise and what it meant for their daily work. The following two quotes illustrate the opposite views:

Multi-professional work is an established way of working in the city. A common service plan is a good tool to make this multi-professional work easier. (Manager responsible for the procurement of child and family services)
I have a very distant relation to this project and I do not know anything about it. I was not able to participate in the first implementation session in which the model and platform were presented. I have had a lot of work and [I have worked] also overtime hours so I have not had the time to ask my superior about this. I only received this invitation to the meeting [study workshop] – otherwise, this project is a total mystery to me. (Representative B of prenatal and child health)

All the problems included in the implementation of the integrated model led to a situation that the recruitment of users was passive. The interviewed professionals told that they felt unsure and did not have all the necessary information to start recruiting citizens. This opinion is illustrated in the next citation:

We did not have enough information to completely understand the concept. And because I did not understand it myself, it was not possible to market it to customers as a positive and good tool. (Representative B of therapeutic services)

The objective of the common service plan was, with the help of the digital platform, to enhance information flow between professionals and professionals and citizens, and thus, to empower citizens. However, citizens were not involved in the development of the model and the digital platform. It was the professionals’ responsibility to interpret and integrate the customers’ needs in the renewal. Consequently, also our research results reflect the views of professionals. Originally, we had a plan to include citizen interviews, too, and this idea was accepted by the managers of the experiment. This plan was given up due to the difficulties in the recruitment of users. It is, however, interesting to map how the professionals tried to take into account the perspective of citizens and empower them. This is discussed next.

III.2 EMPOWERING CITIZENS THROUGH DIGITAL PLATFORMS

The idea of answering citizens’ needs and empowering them via the integrated model of wellbeing meant a remarkable change to the earlier practice. Based on this practice, services had been delivered in a unidirectional process: the user had been seen as a target, not as a co-producer or the co-creator of value. The following quotation illustrates the change:
The common service plan (in line with the nation-wide program) affects the role of professionals. They are no more expected to be omniscient and problem bearing experts. Rather they are expected to be sparring partners to their customers. (Manager of child and family services)

However, as mentioned in the former sub-section, the construction of common service plans with citizens started slowly. The main difficulty was selecting those families who would benefit from the new practice: who had a multi-disciplinary service need, who were motivated, and whose problems were not too severe to be handled in this new way of working. The professionals also had difficulties in marketing the new service to the customer families, because they felt that they didn’t have enough information about the experiment. Thus, the information about the possibility to use the new tool did not reach all potential customers.

According to the interviewees, the reactions varied among those customers with whom the new service was discussed. Some of them welcomed the digital service plan. They considered that wellbeing services will improve when the citizens have the opportunity of accessing all information that concerns their situation and sharing the information with professionals. Collaboration and communication becomes more effective between all the relevant actors required for the delivery of services. Thus, the use of services is simpler and more manageable. However, not all contacted customers were satisfied with the renewal. Some of them did not want to share openly their personal information, and they did not want different professionals to know about all the services they were using. The professionals assumed that this worry was based on the fear of stigmatizing. When a problem is not known by many professionals, it might feel more manageable to the customer. These thoughts are illustrated in the quotations below:

We thought that it is the interest of the customer that all the related professionals share the same information. However, customers do not necessarily want that all professionals know their problems. They prefer to tell about a problem only to that professional who is directly responsible for it… Maybe it is the feeling that the problem is smaller when only one or few professionals know about it. (Manager A of educational services)

Usually customers want to show that they are a “normal” family. They do not want that many professionals know about their problems. In the meetings with our customers, we always ask if there are any problems in the day care,
for example. If there are problems, we try to get suitable professionals to participate in the meetings with the family. The customers who use multiple services should tell whether they have any other problems. It may, however, require efforts to get the “right” professionals to participate. (Representative C of prenatal and child health)

The interviewed professionals emphasized that it is very important to let the citizens know that they are all there to help; they do not ‘spy’ or just give outside advice. Along with the increasing multi-professional group work, there are also sessions in which a customer meets several professionals simultaneously. Here, it is a matter of expertise and experience to create a situation in which the atmosphere is confidential and comfortable as was pointed by an interviewee:

It is a certain skill of professionals to manage the situation in the way that does not put the customer as an underdog. (Representative A of family counselling)

Sensitivity and appreciation is also needed to avoid presuming what the customer should want or aim at. Finding a balance between customer centricity and expert advice was considered challenging by the interviewees. Even though this balance is not a new issue, it is highlighted when several professionals see the compiled information in the common service plan and participate in creating it. It is typical that professionals tend to transmit to customers their vision about what is ‘good life’. This vision may be offered as the goal to the customer even though it is not in line with the customer’s own vision. The following quotation illustrates this problem:

Customers often represent a completely different social class compared to professionals. We have these mantras and beliefs about what is ‘good Finnish everyday life’. And we set that as a goal. The reality is that the customer would be happy with something less… We need to better listen customers’ real needs. We have to take customer needs as the starting point and support them in achieving their own goals. (Manager of child and family services)

The interviewees considered that, despite its problems, the experimented model is beneficial from the viewpoint of citizens. It encourages them to participate in the development of ‘the service palette’ in line with their needs, and in this way, strengthens their role as active customers. In the best case, the empowered citizens are motivated to take
care of their wellbeing in a proactive way. These opinions are illustrated in the following quotations:

I believe that when the customer sees the text that has been written in digital platform, it helps to create a comprehensive picture of the situation and to encourage dialogue… It is a tool which helps the customer to cooperate with professionals. (Representative B of specialist daycare)

I think that the most important benefit is that the customer becomes an active partner in the care process. The customer’s issues and problems are also handled in a comprehensive way and not in a way in which professional A deals with one thing, professional B with another thing, and professional C with the third thing. (Manager responsible for the development of the digital platform)

Summarizing these views of the interviewees: with the integrated model of wellbeing, including a common service plan and the related digital tool, citizens have a better chance of setting the goal they consider suitable in their own life. Correspondingly, the professionals providing services have a better possibility to answer the needs of citizens and to be more customer centric.

CONCLUDING DISCUSSION

This paper has examined the challenges of developing and implementing an integrated model of wellbeing in the context of child and family services. In the model, integration crosses the traditional organizational boundaries and fosters collaboration between social care, daycare, primary school and health care. The aim of the integrated model was to support multi-professional work and reinforce the citizens’ responsibility of their own wellbeing. In the core of the new model was ‘a service plan’ to which the user and the service providers commit themselves, and a digital platform which functions as their mutual information channel.

The empirical study has been carried out in a middle-sized Finnish city, which has been one of the pioneers in Finland to implement integrated services in health and wellbeing sectors. This integration is a general phenomenon in the Western world and reflects the paradigmatic
changes concerning the development of welfare services. The current stage is dominated by the paradigm of New Public Management (NPM), but it also includes elements of earlier traditional public administration and the emerging Network Governance. Empowerment of citizens is an element which particularly clearly reflects a transfer from NPM to network-based practices.

Our empirical study reveals that the attitudes towards multi-professional work were positive among social service providers and there were no significant prejudices towards the digitalization of services. The results indicate that the integrated model of wellbeing – including a common and digitalized service plan – has a possibility to enhance collaboration across administrative and organizational silos such as social care and health care, or social care and primary school. A common service plan is a good and practical tool to support and accelerate collaboration and lower barriers between a variety of professionals. It makes ‘soft’ and tacit information more explicit, and the digitalized platform helps to share information between professionals.

In principle, this kind of a model also promotes information flows between professionals and citizens. It improves the possibilities to answer the needs of citizens and to support the creation of more customer centric services. It clarifies and structures the use of services and makes them more manageable. In the new model, citizens can participate actively in target setting for the services. On the other hand, in our case the practical launch of the new practice turned out to be challenging and the achievements were actually minor, leading not to any permanent changes.

The difficulties manifested reflect the challenges of experiment-based innovation which is today gaining ground in the public sector, too. Experiments have recently been suggested as a more successful innovation model than the traditional linear model. It has been argued that experimentation corresponds to the conditions of modern society whose characteristics are continuous and rapid changes. In the theories on innovation management, experiments have often been linked to open innovation (Sørensen et al., 2010), which is one of the cornerstones of the modern views on innovation. Adaptive trial and error, i.e. quickly realised small successes and failures, are a more realistic way to tackle the uncertainties of future developments than strong pre-planning and systematic steps from ideas to pilots and to the launch (Read et al., 2009).
However, the success of experiments crucially depends on the way in which they are carried out. In our case, a weak point was the lack of a bottom-up perspective. The initiation of the experiment actually followed a top-down practice that traditionally has dominated the activities of public administration (Hartley, 2005). A consequence of this problem was that the staff felt development activities like an extra burden. The interviewed managers were very eager about the renewal but they had not acquired sufficient commitment from the grassroots level and had not organized a balanced process between broad participation and small-scale pilots.

Our case city has a long tradition of development activities and its organization culture supports the creation and implementation of new services. There was also a positive attitude towards collaboration with users. However, the practical ability to implement this collaboration turned out to be challenging; there was not a clear analysis of what the elements of common activities should be and how they should be manifested (cf. Sharma et al., 2014). Difficulties also derived from the nature of social services: user problems are delicate and privacy is extremely important. These specificities of social services imply, among others, that well-functioning practices of other sectors, such as health care, cannot be copied directly.

As regards digitalization, our results revealed that the use of new technological tools is not as straightforward in ordinary work as it appears from the management point of view. Technological readiness (technical equipment, network capacity and know how) to use digitalized platforms is not yet at the sufficient level to fully utilize the potential. Professionals need support from the management to understand and accept these platforms, which many times are unfinished when they are taken into use.

Further, citizens’ attitudes towards new integrated and digitalized services are not solely positive, but may cause doubts: sharing all the information with many professionals on a faceless platform may be frightening and limit collaboration. This issue highlights active efforts to relieve fears in the different phases of the implementation and use of the new tools. On the other hand, the social sector will need online services in the future. Personnel resources have to be focused on those customers who require ‘heavy’ care and attention. Systems supporting
the privacy and the accessibility of information can be secured through data protection.

Further studies are needed to understand the citizens’ role and perspective in the renewal of wellbeing services. However, our study indicates that organizing citizen interviews is a demanding task if the issues discussed are sensitive. Therefore, multiple methods to approach and involve citizens – to collect the valuable information of their expectations and needs – would be beneficial.

Another interesting research issue concerns the role of experimental approaches in tackling the uncertainties of future developments. The experiments usually materialize at the local level, but are dependent on the national policies and politics. At the national level, experiments are often launched without an allocation of resources for the spread and broader application of the results. To accelerate an experiment-friendly culture and to ensure experiment-based learning and dissemination, a better understanding is required of the interlinkages between the goals of the national government and the strivings of local authorities.
REFERENCES


Innovation by Experimenting in Public Services

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Chapter 11
Innovation by Experimenting in Public Services

Johanna Leväsluoto, Kirsi Hyytinen, and Marja Toivonen

Abstract Experimental development has been suggested to answer the problems of slowness and ineffectiveness in current innovation activities. It is also applied in the public sector, where it raises specific issues due to traditional bureaucracy and strong professionalism. In our study, carried out via interviews, we examined experimental development and its challenges in a middle-sized Finnish city. The experiment focused on a new integrated model of wellbeing that aimed to promote multi-professional collaboration and citizen empowerment in child and family services. A common service plan and a digital platform were core elements in the model. However, the purpose of the experiment remained too vague to the practitioners, and the experiment was stopped before the deadline. Central challenges were the one-sided focus on top-down management, growing workload and problems of the digital platform. Despite the ‘failure’, the experiment offered valuable learnings that can be applied in the future. Clarifying the concept of experimenting and improving the collaboration between local activities and governmental policies are among the most important lessons learned.

Keywords Experimental development · Public sector innovation · Wellbeing services · Social services · Digitalization

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11.1 Introduction

This chapter discusses experimental development in the public sector. It focuses on a case study and, as a background for it, analyses literature on the benefits of experiment-based innovations and on the specific innovation challenges in the public context. The concept of ‘experiment’ refers to so-called social experiments, in which a pilot test in a real-life context is set up to obtain empirical evidence of the effects of a policy programme or some other novel societal solutions. The rationale is to observe whether the programme works in action and to create a working model that takes into account the success factors and sources of problems in the programme (Orr 1999).

Experimental approaches have been suggested as a more successful innovation model than the traditional linear model, which is based on a highly formalized process. Slowness, rigidity and insufficient effectiveness of the linear model have encouraged search for alternative ways to carry out innovation activities. The proponents of experimentation have argued that this approach suits particularly well to the conditions of modern society. It merges planning and implementation and in this way favours flexibility which is necessary in answering the challenges of continuous and rapid changes, typical of the current development (Eisenhardt and Tabrizi 1995). Experimentation also provides means for rapid learning. Several innovation theorists have highlighted that practical forms of learning are particularly important in innovation; they include learning by doing, learning by using and learning by interacting (Lundvall 2001). Further, experimental approaches are compatible with the ideas of open innovation, which is one of the cornerstones of the modern views on innovation (Chesbrough 2011).

Experimental development has gained foothold in the public sector, too. There are, however, specific issues in this context that generate challenges to the adoption of experimental practices. First, the concept of innovation is a newcomer in the public sector (Windrum 2008); the changes have usually been understood as ‘reforms’ or ‘policy changes’ (Christensen 2012). Second, the inclusion of bottom-up initiatives is often missing as the top-down perspective has traditionally dominated the activities of public administration (Hartley 2005). Third, the dissemination of the results of experiments is challenging, because experiments are often launched without an allocation of the responsibility and resources for the spread of the results. General models that would facilitate broader applications are rare (Tummers et al. 2009).

In our study, we examined the manifestation of these challenges in a case in Finland. In 2014, the Finnish Parliament accepted a law on experiment-based development in cities and municipalities for the years 2015–2016. The aims were to promote experimental culture in Finnish municipalities, on the one hand, and to generate more efficient and effective services, on the other. We have studied the implementation of experimental development in a middle-sized Finnish city, in particular, but also interviewed ministerial representatives about the general goals and nationwide achievements. The specific experiment that we focused on at the local level concerned the introduction of a new integrated model of wellbeing in social
services for children and families. The key elements of the model were multi-professional collaboration, a service plan jointly formulated by the customer and the professional and a digital platform that would support the dialogue between the professionals and the customers. The purpose of the experiment was to promote multi-professional teamwork and citizen empowerment.

After this introduction, we have structured the chapter as follows. In the second section, we present the theoretical backgrounds of our study: the development from linear innovation models towards more experimental approaches and specific issues characterizing innovation in the public sector. In the third section, we describe the context of our empirical study and the methods of data collection and analysis. The fourth section summarizes the results. We have divided the results to those describing the views of the representatives of the local level (our case city) and to those describing the nationwide perspective of ministerial representatives. In addition, we report lessons learned from the experiment. The fifth and last section includes the concluding discussion.

11.2 Theoretical Background

11.2.1 From Linear to Experimental Innovation Models

Models based on intra-organizational research and development (R&D) have dominated the discussion about the innovation process. The ideal has been a sequence of stages: idea generation, screening, evaluation, detailed development, testing and launch. The concept and practical realization of these stage models have been crystallized by the representatives of the ‘schools’ of NPD (new product development) and NSD (new service development) (e.g. Cooper and de Brentani 1991).

The focus of the stage models has been the systematization of development processes, resulting in the increase of visibility of innovation efforts (Toivonen 2010). The visibility has facilitated the creation of innovation indicators based on the resources allocated. Indicators are used at both the organizational and the policy level. In the latter context, a benefit has been the possibility to adopt tools for innovation support and to measure its amount. On the other hand, stage models are time-taking – a problem that was identified soon after their introduction. This problem was answered by a modification that is today generally applied: a parallel conduct of stages (Alam and Perry 2002).

However, there is an additional problem: in practice, the stage from which the innovation process begins varies, and the end of one innovation process is often the beginning of the next. Several researchers have suggested that models of a spiral or circular type correspond better to the complex and recursive nature of innovation than a linear logic (Buijs 2003). In order to make the stage model to answer better the reality, there has emerged a suggestion that the front end of innovation should be separated from the later stages. It has been argued that experimental activity, which
includes side steps and iterations, particularly characterizes the beginning of an innovation process. Through the separation of the front end, a synthesis has been pursued between creative problem-solving and rational planning (Koen et al. 2001).

Even this solution does not answer the basic challenge: the nature of innovation as a phenomenon whose result is not known beforehand. Engvall et al. (2001) point out that stage models have concentrated on the systematization of the form of the innovation process but say very little about the content. However, it is just the content which is the main problem: the idea included is still immature and difficult to express in words. Constructing a plan for something which is not well-known and involves abundantly tacit knowledge is not a reasonable approach. More effective is a strategy which enables the creation of shared experience of the object to be developed. This means that planning and implementation should be merged to some extent.

Also other researchers have questioned the idea that planning always occurs first and is followed by implementation. Moorman and Miner (1998) argue that ‘organizational improvisation’ is general in practice but often hidden behind a formal description of innovation processes. They identify three circumstances in which this approach is particularly important. First, unexpected stimuli may create the need for action without providing time for planning. Second, this approach might be prompted when planning cannot provide all the details needed in implementation. Third, a situation where much real-time information is available evokes immediate responses. Similarly, Eisenhardt and Tabrizi (1995) suggest experimental innovation with reliance on real-time experience: rapidly building intuition and flexibility is essential on the uncertain path of innovation.

The development of user-based innovation has progressed hand in hand with the non-linear thinking about innovation (Sundbo and Toivonen 2011). Traditionally, users have been considered important as the source of needs-based information, and still today many organizations interpret user orientation as the gathering and storing of user information. This approach has, however, been criticized as ‘superficial’, and the elaboration of user information into deeper user understanding has been required. This means that information should be structured, interpreted and shared to make it applicable and to link it to the organizational strategy (Nordlund 2009). The actual involvement of users is also an emerging trend. In addition to the emphasis on user interaction in the front end, the role of users has been highlighted in the transition from development to implementation (Hasu 2001).

The possibility of interactive learning highlights the users’ role in innovation. The creation of shared experience of the object to be developed requires that both the users and the providers are understood to be innovators. von Hippel’s work (e.g. 1978, 1986) during three decades has paved the way for this view. According to him, users offer more than an idea for a new product or service. They may provide an innovating organization with the identification of a problem or need, outcome-related specifications or even a complete design of a product or service. In newer research, the continuation of the innovation process after the launch has been pointed out. Because novelties have different meanings for different user groups, they are often reinvented: actively interpreted and appropriated by users. Sundbo (2008) calls this phenomenon ‘after-innovation’. He states that an innovation is not
completed when it is launched, because customers cannot say beforehand what they want. They suggest ideas for improvements when they use the novelty in practice.

Along with the interest in user-based innovation, a question has been raised about the ways in which user experience could be made continuously flowing into the provider organization. The approach of employee-driven innovation highlights that front-line service workers have understanding on user needs based on the daily interaction. They can transmit real-life information and combine this information with their own ideas. However, the implementation of these ideas requires that the bottom-up processes are recognized and organized by the management. Managers should support employees by allocating resources, and they may also invite employees to participate in top-down innovation processes (Kesting and Ulhøi 2010).

One interesting employee-driven phenomenon is ‘bricolage’ (Fuglsang 2010). Theorization on employees as bricoleurs analyses their role not only in the transmitting of ideas but also in their implementation. Bricolage includes a process of co-shaping an emerging path: various actors offer inputs and gradually build competences via learning by doing and interacting. The boundaries blur between design and implementation and between rule making and rule following. The bricolage view suggests that in a situation characterized by resource constraints, employees may find innovative solutions based on ‘whatever is at hand’. This notion is particularly important in public services which are often developed in the conditions of scarce – even diminishing – resources.

The approach of effectuation (Sarasvathy and Kotha 2001; Sarasvathy 2008) is near to the ideas of bricolage. Effectuation has its background in theories that highlight the significance of human resources, relationships, networks and institutions. It suggests the replacement of predictive logic with a means-oriented approach to tackle the uncertain environment and to co-construct novel solutions with stakeholders. The means-oriented approach begins from available resources that are expanded in the courses of action and enable a stepwise clarification of goals. This approach clearly differs from a linear process, which starts from the identification of an initial opportunity, sets a goal and aims to achieve it in a preselected context (Read et al. 2009).

Adaptive trial and error characterize effectuation and are necessitated by the uncertainties of the current operational environment. In such a situation, predictive information does not support decision-making in the best possible way; more reasonable is relying on strategies that enable direct control, co-creation and transformation of conditions towards positive outcomes. Quickly realized small successes and small failures help avoid the risk that some action would put the entire effort in jeopardy (Sarasvathy and Kotha 2001). However, this alternative approach must include enough structure to support the utilization of resources and to foster collaborative creativity. It can be achieved via framing the problem comprehensively: using a framework or schema within which specific decisions and their linkages to other decisions can be contextualized. The ability to group problems into fundamental categories and relate them to other problems results in knowledge architectures that link multiple decisions in the task domain over time with feedback and interpretation (Read et al. 2009).
11.2.2 Innovation in the Public Sector

Public services face today the combined challenge of increasingly wicked problems and scanty financial resources. There is an ongoing change in the intervention strategies of public management which reconstructs its responses to economic and social crises, weakened social links and the challenges of welfare state (Harrison et al. 2010). In addition to incremental improvements that continuously emerge in public organizations, also systemic changes characterize the public sector. However, as mentioned in the introduction, the concept of innovation has only recently been introduced to the conceptual apparatus of public management (Windrum 2008).

Researchers have also identified a larger, paradigmatic change in the way in which the nature of the public sector and public services has been understood. This change has taken place during the last 30–40 years and includes the transfer from the traditional public administration to new public management (NPM) and further to the emerging network governance (NG) (Langergaard 2011). The traditional administrative paradigm held a top-down view of the public sector, which was seen to be based on a bureaucratic and rule-based order. Services were authoritative pursuing equity but not providing users with a possibility to influence (Torfing and Triantafillou 2013). Changes were initiated top-down via legislation (Hartley 2005). The traditional paradigm held its dominance until the 1980s when the NPM paradigm was introduced. It brought market mechanisms to the public context: business-type management, lean processes, performance focus and contracting-out. One of the most important ideas was handling the citizens as customers who have the right to require high service quality and free choice (Rhodes 1996). NPM also meant that innovation was explicitly articulated as a goal (Langergaard 2011).

The benefits of NPM are indisputable compared to the earlier bureaucratic view. On the other hand, also its limits have become apparent along with the development towards increasingly complex issues, multiple actors and need for open dialogue (Sørensen 2002). Consequently, while NPM still has a strong position in the public sector, there is a new paradigm emerging: the so-called network governance (NG). It highlights relationships and partnerships and co-production as the service model (Newman and Clarke 2009). Efficient intra-organizational processes are no more enough, but the crucial issue is the empowerment of citizens. The emphasis on governance over government favours horizontally organized and relatively fragmented systems in which order is achieved through the regulation of self-regulating networks.

Currently, the NG paradigm evolves in parallel with market imitation and the still surviving elements of bureaucracy (Newman and Clarke 2009). The co-existence of these fundamentally different views is not without contradictions. A central problem is the reconciliation of the top-down thinking, which is a typical element in traditional administration, and the bottom-up views, which belong to the principles of NPM and NG. Contradictions between the top-down and bottom-up approaches are visible at both the organizational level and the policy level.
Strong professional power is a characteristic of public services (Currie et al. 2012). Traditionally, this power was built on ‘occupational professionalism’, i.e. on a specific discipline and expertise (medical, educational etc.). It emphasized autonomy and self-regulation of work by professional groups, whose expertise places them in a unique position to act best in the users’ interests. Both NPM and NG have aimed to change the nature of professionalism towards organizational professionalism (Evetts 2003). It is a managerialist version of professionalism and serves the interests of the organization rather than professional groups (Hood 1991). Professionals are expected to be entrepreneurial, creative and efficient lifelong learners and teamworkers, who should share and transform their knowledge and cooperate with other professions (Dent and Whitehead 2002).

In contemporary studies, there is a strand which posits the existence of a hybrid of organizational and occupational professionalism (Skelcher and Smith 2015). This hybrid perspective provides a good starting point for the consideration of the issue on how to promote innovativeness among professionals. The approach of employee-driven innovation (Høyrup 2012; Kesting and Ulhoi 2010) has highlighted that actions supporting the wellbeing of employees are relevant in terms of creating a better atmosphere for the adoption of new practices. Flexible service production models that are responsive to the changing needs of the users require a focus on supportive leadership, boosting employees’ intrinsic motivation, creativity and wellbeing. They call for managers to better recognize bricolage: mundane problem-solving activities (Fuglsang and Sørensen 2011). The needs of users are embedded in the approach of employee-driven innovation but need attention in order to make the interaction with users successful.

According to the idea of network governance, citizens are active partners in planning, creating and shaping the delivery of public services (Moore and Hartley 2008). ‘Citizen empowerment’ has been the key concept to understand the citizen participation. WHO (1997) defines empowerment as a process through which citizens get greater control over the decisions and actions affecting their health and wellbeing. This approach views people as subjects and actors who have sufficient skills and self-efficacy to take the responsibility of their conditions in their own hands (Mäkinen 2006).

With the rise of information technology and digital applications, citizens have gained new abilities and ways to participate and express themselves in a networked society. In healthcare, for instance, citizen empowerment through digital platforms has been an active area of research and development (R&D) (Honka et al. 2011). Several studies show that the empowerment of citizens can be accelerated with digital devices and applications (Samoocha et al. 2010; Webb et al. 2010). Digital empowerment has helped to put citizens on the drivers’ seat to manage their own wellbeing and lifestyles (Papastergiou 2009).

However, researchers have noted that the potential of service co-production with users and citizens has not been fully understood in the context of public services (Bovaird 2007). An additional challenge is that professionals often have difficulties to identify the policy programmes they are expected to implement (Tummers et al. 2009), which leads to the non-spread of innovations (Ferlie et al. 2005).
Understanding the collaborative processes of public service creation and delivery through digital platforms is also insufficient (Bovaird 2007). To improve the situation, the service culture should be renewed so that it enables both the actual partnership with citizens and the utilization of a variety of communication and interaction channels between citizen and professionals.

### 11.3 Empirical Context and Methodology

#### 11.3.1 Context of the Study

As mentioned in the introduction, our case context is the experiment-based development in Finnish cities and municipalities in 2015–2016. A specific law accepted by the parliament formed the framework for this development. More than 30 cities and municipalities participated in the project. Six topics were selected for experimentation: educational services, housing services, youth employment, collaboration of public authorities in social security, auditing of municipal operations and an integrated model for wellbeing (Tempo Economics 2017). Our study concerned the last-mentioned topic and its implementation in a middle-sized Finnish city. We chose this experiment for our study because it represented a particularly ambitious effort to promote simultaneously employee-driven and user-based practices in innovation. The experiment also highlighted the use of digital tools in the empowerment of citizens in a new sector: social services. (Our study was part of a bigger project that focused on the development of public services in the digital era: ‘The revolution of service economy - Human being at the core of digitalization’.)

The city focused its experiment on child and family services. The ‘integrated model of wellbeing’ included a life-cycle based total offering whose objective was to reinforce the citizens’ ability to take responsibility of their own wellbeing and to support this development via multi-professional collaboration. The total offering consisted of social care (child protection and family counselling) and preventive and therapeutic services in the neighbouring sectors: day care, primary schools and healthcare. The novelties experimented were a service plan to which both the customer and the professionals commit themselves a digital platform as a mutual information and communication channel between citizens and different professionals. Empowering citizens to participate in the planning of services was also an aim.

The integrated services were especially targeted to citizens who have multiple needs for social care and who therefore are in contact with different professionals from different sectors. The focus was on preventive services in order to diminish problems whose afterward relieving requires considerable resources. Four key processes were identified: (1) early discussion about the concerns of citizens, (2) high-quality multi-professional collaboration, (3) long-term support to the parenthood and (4) the development of social skills of both parents and children. These processes were concretized into life-cycle based and integrated service products. A
common service plan aimed at collecting together the various plans that were made for the customer, each of them answering a specific need. These kinds of service plans have earlier been used in healthcare, for example (Määttä et al. 2014), and they are actively discussed in other sectors, too. The digital platform aimed to facilitate the distribution of information: the professionals and the customer had access to one and the same information. They could also update and complement the service plan that was made in the electronic form and located on the platform.

11.3.2 Data Collection and Analysis

We applied semi-structured interviews as our main source of data: the topics were decided beforehand, but within them, the respondents were given a great deal of freedom (Bryman and Bell 2011). The interviews were carried out in two rounds. In the first stage, we interviewed the managers and professionals who had participated in the experiment. In the second stage, we interviewed state representatives who had been developing the framework for the nationwide project. The first-round interviews were carried out between October 2015 and February 2016 and the second-round interviews between November 2016 and February 2017.

In the search for the interviewees, we used snowball sampling. We started the first round by interviewing the local manager of child and family services. Based on her suggestion, we thereafter invited other local interviewees: managers and professionals. The interviews of the managers were conducted individually, and the professionals were interviewed in three groups. The first group consisted of professionals from child protection and family counselling and prenatal and child health. In the second group, the professionals represented specialist day care, pre-primary education and therapeutic services (speech and activity therapies). While these two groups were specifically compiled for our interviews, the third group collaborated on a permanent basis: the professionals in this group were responsible for the evaluation of customer needs. They represented family counselling, health services in primary education and day care and team leaders of child and family services.

The results of the first-round interviews revealed the challenging nature of the experiment; it was actually closed down before the end of the nationwide project. This made us interested in studying the reactions of the upper city management and the views of the governmental representatives who had been developing the framework for the municipal experiments and the respective law. We applied again snowball sampling. We started the second round by interviewing the head of education and welfare services in the city and, based on her suggestions, requested interviews from two additional local managers who could provide strategic and customer-centric perspectives. She also gave us recommendations for interviewees at the state level: ministerial advisers who had been developing the experiment-based pilots in health and social care. Finally, we interviewed leading experts from the Office of Data Protection Ombudsman. These interviews were included because the sensitivity of the information in social services had been continuously raised as an issue in
the interviews; the Ombudsman had also been involved in the preparation of the law for municipal experiments. The summary of the interviewees is presented in Table 11.1.

The main topics of the first-round interviews were:

(1) The background of the multi-professional collaboration and its current stage in the child and family services.
(2) The role of customers in the multi-professional service interaction.
(3) The main elements of the new integrated model of wellbeing.

Table 11.1 Summary of the interviews

<table>
<thead>
<tr>
<th>Interview rounds</th>
<th>Number of interviewees</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Round 1</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local managers (total)</td>
<td>5</td>
<td>October 2015–February 2016</td>
</tr>
<tr>
<td>Manager of child and family services</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Manager of educational services</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Manager responsible for the development of the digital platform.</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Manager responsible for the procurement of child and family services.</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Local professionals (total)</td>
<td>18</td>
<td></td>
</tr>
<tr>
<td>Group 1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Child protection and family counselling.</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Prenatal and child health.</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Group 2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Specialist day care</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Pre-primary education</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Therapeutic services (speech and activity therapies)</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>Group 3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Family counselling</td>
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<td></td>
</tr>
<tr>
<td>Health services in primary education</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Day care</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Team leaders of child and family services</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td><strong>Round 2</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Local managers (total)</td>
<td>3</td>
<td>November 2016–February 2017</td>
</tr>
<tr>
<td>Head of education and welfare services</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Strategy manager</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Manager responsible for customer processes</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>State representatives (total)</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Ministerial adviser from the Ministry of Social Affairs and Health</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Data protection ombudsman</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Lawyer from the Office of Data Protection Ombudsman</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>
(4) The aims of the new model, concerning particularly the digital service plan.
(5) The managerial challenges linked to the new service practice and to the change pursued.

In the second-round interviews, we focused especially on the following topics:

(1) The aim of the nationwide experiment as regards the topic of the integrated model for wellbeing.
(2) Implementation of the experiment; experiences of implementation.
(3) Impacts of the experiment on local and nationwide systems.
(4) Scaling up – the outcomes of the experiment.
(5) Continuation based on the results.

All interviews were recorded and transcribed. The analysis and interpretation of the data was conducted in a dialogue between theory and empirical findings. The empirical observations were analysed in the light of the theoretical bases of the study: the experimental approach in innovation and specific issues of the public sector. We did not use any computer-assisted coding tool, but several rounds of analysis were carried out to derive meanings from data and to reduce the amount of data (Huberman and Miles 1994). While reading the interviews, we uncovered the most common and typical themes and classified and structured them. In this way, we aimed at creating a holistic, systematic and thorough understanding of the research topic. The quotations in the results sections illustrate the level at which extracts were picked from the material. During the first round, the analysis results were presented to the city representatives who participated in the study; a workshop was organized to validate the results and to acquire supplementary information.

11.4 Research Results

This section presents the results of our empirical study based on the interviews. It explains first briefly how the experiment – an integrated model of wellbeing in child and family services – was implemented in our case city. Thereafter, the results are presented in two main parts: experiences at the local level and experiences at the state level. (The local interviews from the second round have been combined with those of the first round. An exception is some views of the local head of education and welfare services who also commented issues of governmental policy). In the reporting of the results, the different respondents belonging to the same profession or position have been distinguished from each other by marking them A, B, C etc.

The views of the local actors revealed two main challenges in the experiment: motivational problems among the professionals due to top-down management and growing workload and problems of the digital platform. In the views of the governmental developers, we identified two main topics: the concept and management of experimental development and the issue of data security and confidentiality. These challenges and topics have been analysed in different subchapters respectively. In
addition, there were quite lively discussions on the further development of the experimented model – we report them as lessons learned from the ‘failed’ experiment.

11.4.1 A Short Summary of the Conduct of the Experiment

Our case city was one of the first participants in the national project on experimental development. As many other Finnish cities, also this city had applied the idea of integrated services in healthcare, and the results had been promising. Now the managers of social services were eager to test this idea in the services of their sector. A project team was established, and the manager of child and family services was selected as the leader of project. However, she changed her job to another organization after the first project year, and because the project also otherwise was going to its end, a new project manager was not selected.

As the target sector of the development consisted of multiple different units, disseminating information about the goals of the project would have been a key task to make the participants committed. This task was not carried out properly and early enough. The project group asked superiors to tell professionals that there will be a common service plan on a digital platform, and this information was also disseminated via direct emails to professionals. The application of the plan was, however, voluntary – demands on its use were not presented, and the cases in which it would be particularly suitable were not specified in detail. Because only a few professionals had participated in the development work, a broader understanding about the purpose of the project did not develop.

A digital platform was considered essential right from the beginning of the project. In social services, the customers usually meet several professionals, but the professionals have not traditionally exchanged information about the customer needs. The only one who can combine information is the customer him-/herself, but he/she cannot evaluate the relevance of various pieces of information without professional help. Thus, the project group started to develop a common digital platform for those parts of customer data that were not too confidential for professional exchange. The design of the platform was purchased from an IT company and was tailor-made for the present purpose. However, the resources reserved for the development were minor, and the platform included many shortcomings. The work was delayed, and the deadlines were postponed many times. The users were given the possibility of comments at quite a late stage. When the platform was nearly finished, three implementation sessions were arranged to professionals on the use of the platform.

In addition to the information exchange between professionals, the digital platform was aimed at being a tool for customers and for the interaction between customers and professionals. The idea was that the customer’s multi-professional service plan is saved on the platform and thereafter both professionals and customers can update it digitally. To make this idea work, the recruitment of suitable cus-
tomers was a central task but turned out to be too difficult. Marketing the service by the professionals was passive due to the above-described unclarity of the novel practice. The end result was that only a couple of customer families willing to use the platform were found. This and other problems led to closing the experiment during the second year. Even the families that preliminarily promised to use the platform did not actually use it.

### 11.4.2 Challenges in the Implementation of the Experiment at the Local Level

#### 11.4.2.1 Top-Down Management and Growing Workload

The interview results revealed that the professionals participating in the experiment had positive experiences about working with other professionals and they welcomed new possibilities of multi-professional practices. They wanted to break down organizational silos and lower barriers between professionals and service users. The interviewees considered that an important positive effect of the new model and the related digital platform was the possibility to see information produced by the professionals of other sectors in common customer cases. Also the managers thought that the new model would improve customer-centricity and the digital tool would make the work of professionals easier because it facilitates the access to information. The citation below presents this view:

> Multi-professional work is an established way of working in the city. A common service plan is a good tool to make this multi-professional work easier. (Manager responsible for the procurement of child and family services)

However, the way in which the renewal was introduced caused problems. From the beginning, the experiment was led top-down. The idea of the service plan was not co-created; only a few professionals participated in its development. This weak involvement affected negatively on their commitment. Even when organized, many professionals had skipped the participation in the development sessions – tight timetables and the professional priority of the customer work were used as excuses. These problems are illustrated in the following citations:

> We got an invitation yesterday to meet next week’s Tuesday. We arrange customer appointments two weeks ahead and it is very difficult to fix new times for the customers. You would need to call customers and rearrange the meetings, which might have been cancelled and rearranged many times before. Sometimes I feel that these projects force me to abandon my primary work. (Representative A of prenatal and child health)

> I have a very distant relation to this project and I do not know anything about it. I was not able to participate in the first implementation session in which the model and platform were presented. I have had a lot of work and [I have worked] also overtime hours so I have not had the time to ask my superior about this. I only received the invitation to this meeting [the study workshop] – otherwise, the project is a total mystery to me. (Representative B of prenatal and child health)
The professionals were also afraid that the experiment would generate new tasks and responsibilities that would challenge their ordinary work. The interviewees complained about ‘a never-ending flow of new tasks’ which decreases the face-to-face time with customers. In the long run, the increase of the workflow may cause wellbeing problems.

The main problem is that there are always more and more responsibilities even though your workload is already full. New tasks are added on the former responsibilities. Nothing is taken away. A key question is how long you can increase the workload of professionals. Do we think that they can cope with all these new tasks? (Representative A of specialist daycare)

The experimental nature of the new model generated concerns, too. The interviewees thought that the new model may just be a pilot and will not become a part of their daily practices. Thus, they had difficulties in motivating themselves to participate actively in the development. Notably, this was not the only development project as the following quotation shows. The interviewees felt it problematic to identify which projects are genuinely impactful in practice and therefore worthy to participate.

There are many experiments starting; in the end, they do not affect any practices. Often these initiatives even stop before they have properly started… Initiatives come and go, come and go. And when you have lot of work, you can continue without realizing the effects of these experiments. It is very difficult to know in which experiments you should take part. Quite often when I have tried to participate and wanted to find out what the idea is in an initiative, the experiment has already disappeared. (Representative A of pre-primary education)

Not only professionals but also managers presented critics against the poor implementation of the project. The manager responsible for customer processes noted that – in addition to the top-down nature of the process – a problem was that no one genuinely took a responsibility of the actual development work. Various managers and professionals were involved in it, but the work was not coordinated and resourced properly. That caused concurrent and divergent processes, in which the professionals did not share the same understanding and targets of the development.

To really promote project targets, someone should concentrate on this work. We need someone to coordinate and take the overall responsibility … Otherwise you cannot see required results. In the current project, the idea came from the city management but it was not delegated properly. There were five different managers who were involved in the development. However, it is not enough that five managers hustle around the same topic, if no one takes a real responsibility. If no one has resources or possibility to concentrate on the development, the quality of the work is not good. (Manager responsible for customer processes)

The problems described above led to a situation that the recruitment of service users was passive. The interviewed professionals told that they felt unsure and did not have all the necessary information to start recruiting customers, as illustrated in the following citation.

We did not have enough information to fully understand the concept. And because I did not understand it myself, it was not possible to market it to customers as a positive and good tool. (Representative A of therapeutic services)
11.4.2.2 Problems of the Digital Platform

The experiment was strongly technology-oriented: the digital platform played a central role in the basic idea of the model. On the other hand, the digital tool came ‘out of the blue’ to the practitioners – its preparation was in the hands of the management. This situation resulted in misunderstandings: the professionals did not know how the digital tool should be used in practice and what it meant for their daily work. The interviewees pointed out that the introduction of new digital platforms is time-consuming and requires learning and patience both from the service providers and from the users.

An additional problem emerged from the customized nature of the platform; it was not connected to the other IT platforms used by the professionals. Technically, it was very basic and traditional and did not support the idea of open data. The technical immaturity and problems related to it slowed down the implementation of the common service plan. The interviewees highlighted that the digital tools should work without problems right from the start to ensure the commitment of practitioners. They also called for more ‘realism’ in the introduction of digital tools: not all workplaces (e.g. daycare homes) have digital equipment, and it is not self-evident either that all users (e.g. immigrants) have computers. There may also be mistrust towards new technology and fears about lost information. The following citations describe these views:

In a way, we thought that we could take certain parts from the new digitalized world and link them to the traditional way of providing services which is managed by professionals [and not engage users]. It was a mistake – we created a closed platform; it did not embrace the idea of open data. (Head of education and welfare services)

I have seen the platform, but I have to use my private bank codes to get in, because I do not have the necessary equipment in my workplace. However, I have not made any comments on the platform as I do not even know whether I have enough skills to use it. (Representative A of prenatal and child health)

The success of the experiment would have required changes in the ways of working of professionals. In a digitalized world, citizen participation plays an essential role in the implementation of services and requires new professional competences and new ways of interaction. As they had not been properly considered in this experiment, citizen participation was low. There were also other problems that weakened participation. The customer group, which was selected to the experiment, was very demanding: the customers had multiple needs for social care and their life situations were often very difficult. Their needs were sensitive, which is why they required face-to-face contact, not digitalized services in the first place. According to the head of education and welfare services, a more successful strategy would have been to concentrate on children and adolescents with moderate problems. In this group, a digitalized platform with a common service plan might have genuinely worked.

The experiment might have required that the professionals understand their new tasks: they should have been capable to help customers in the use of new digital services. Another issue is that we should have tested the common service plan first with customers who do not have serious problems and multiple needs for care. (Head of education and welfare services)
11.4.3 Challenges from the Nationwide Perspective

11.4.3.1 The Concept and Management of Experimental Development

The interviews of governmental representatives revealed more general viewpoints on the challenges of experimentation. According to the interviewed ministry advisors, one of the key problems is that practitioners do not understand the concept ‘experimental development’. They are not familiar with this type of development and have not a clear understanding of what the implementation of an experiment requires from their organization. The fundamental insight about the close relationship between experimenting and learning is often missed, and therefore trial and error are not allowed. If the definition and structure of the experiment are not clear, too much time and resources are used for clarifying the terms and ‘wondering the implementation’.

According to the ministerial interviewees, the conceptual vagueness is manifested as a lack of leadership and management and as an unplanned project – experimentation is seen to realize itself automatically. To improve the situation, an experiment should be understood as a process of continuous improvement, which requires careful planning as an integral part and the capacity to learn from mistakes. The interviewees thought that in the present case, the experimentation process was not designed properly and learning from the results was neglected. The following quotations illustrate the opinions related to the fundamental characteristics of experimental development:

The characteristics of [experimental] development include the possibility to fail. If something does not work then we can try something else. However, this [learning] requires capacity to cope with the errors, document them and make new plans. (Ministerial Adviser A, Ministry of Health and Social Care).

To carry out an experiment is challenging; too much time goes to clarifying the conceptual characteristics of the experiment. What happens after the experiment ends should have been thoroughly thought also… (Ministerial Adviser B, Ministry of Health and Social Care).

As seen in the last quote, the implementation of results and the creation of new services were raised as another challenge by the governmental interviewees. The projects typically lack dissemination plans, even though the next stages after the experiment should be a target right from the beginning. Some experiments have overcome this challenge and been capable of creating new services, but usually the changes have taken place in the experimenting organization only. Thus, the innovations created are not diffused at a wider scale, and significant impacts in service systems are missing. The interviewees admitted that this is partially caused by the lack of learning practices at the policy level. Common structures do not exist because of the administrative silos and poor collaboration between the ministries. ‘Reinventing the wheel’ is a trend that replaces learning from the experience of others. Consequently, experiments are detached from each other and good practices do not spread.
Traditionally, the most difficult phase has been the step of implementing the project results and changing the activities. (Ministerial Adviser A, Ministry of Health and Social Care)

A tool for assessing the customer’s situation has been developed, but the question is to which activities it should be integrated or connected at the policy level. The lack of collaboration between ministries is a problem... A challenge in our social and health care system is that we have too many independent actors and organizations. These actors have a tendency of thinking that they are unique. This tendency is visible in services; every actor and organization wants to design services by themselves. (Ministerial Adviser B, Ministry of Health and Social Care)

The interview of the local head of education revealed additional problems in the interaction between the state level and local level. She argued that the support from national level was insufficient and therefore the cities included in the nationwide project were not able to create successfully new services. She considered that the issue is linked to the discontinuity of policies. In the present case, a particular challenge was a parliament election and the related change of the government in the middle of the experiment. The new government changed the focus of policies which affected on the continuation of the experiment – part of the resources allocated to it were transferred to other projects.

At the same time, the government changed based on the new parliament, and the interest towards this experiment decreased. The experiment did not stop because it was planned to continue beyond the election, but the interest and resources were allocated to new efforts. (Head of education and welfare services)

11.4.3.2 The Role of Regulation and the Issue of Data Confidentiality

The interviewed ministerial advisers had identified a contradiction in the local desire for governmental advice. Local managers aim at relieving insecurities in the implementation of experiments by asking very strict instructions from the ministries. On the other hand, practitioners typically blame the existing instructions and feel that regulations diminish possibilities for collaboration between professionals. Common to both groups is the ‘feeling of unclarity’, which in social services is also justifiable due to diverse regulation; local managers and professionals have difficulties to know what is legal and what is not. Attitudes towards legislation vary, too – it is regarded as an enabler or as a barrier depending on the case. The ministerial actors themselves prefer a balanced view: they see instructions primarily as enabling, but do not favour nonregulated experimentation either. They believe that enabling directions enhances innovativeness and creates opportunities for experimental development.

The responsibility of the grass root professionals should be increased – now professionals require too precise instructions. Strict regulation does not solve things; we need more enabling regulation. (Ministerial Adviser B, Ministry of Health and Social Care)

The legislation in social care is not coherent...we have noticed it when we have started to develop digitalized services. (Ministerial Adviser B, Ministry of Health and Social Care)
The issue of regulation had caused debate in our experiment and was highlighted in the local-level interviews. A specific aspect linked to regulation is data confidentiality. The professionals understood the need to protect citizens’ privacy, but they argued that the current regulation hinders necessary information transfer between professionals and hampers the development of new integrative practices. The interviewed Data Protection Ombudsman and his colleague formulated the problem differently: the use of customer data is allowed if the customer gives permission to it and if the data is linked to the customer case at hand. However, the professionals may have difficulties in defining the relevant information, and this makes them uncertain about their needs for information. Uncertainty leads to the fear of mistakes and consequently to the avoidance of cooperation.

The Data Protection Ombudsman noted that despite the sensitivity and the related challenges of the confidentiality issue, changes in the definition of confidential data are possible if they are made from the citizen-centric viewpoint and serve citizens’ needs. The focus should be shifted from the service provider to citizens and to better and more holistic services to them. Customers’ service needs should be considered central in any discussion between professionals. The role and power of IT systems is one problem that makes the situation difficult. Information management dominates the general management, resulting in a knowledge and leadership gap.

Cooperation and information exchange among professionals are always possible if they are related to a specific customer need… However, irrelevant information, even if it concerns a specific customer, should not be passed to another professional. (Lawyer from the Office of Data Protection Ombudsman).

The lack of knowledge about the data confidentiality leads to uncertainty. However, this uncertainty is not necessary. We should better describe customers’ rights: data should not be transparent and open to every professional, but its use should be linked to a specific case. The regulation related to the data confidentiality aims to protect customers against outsiders. However, the professional may experience it difficult to define who is an outsider. (Data Protection Ombudsman)

There is no problem with information flow between professionals. I believe that the problem is the lack of expertise and management. The power of IT systems is difficult to overcome. Data protection does not prevent cooperation, but city managers can easily blame it. And if the managers do not know the situation, they cannot help the professionals, which should be their job. (Data Protection Ombudsman)

11.4.4 Lessons Learned from the Failed Experiment

Even though the common service plan was not implemented in the child and family services after some first trials, the interviewees agreed on its development potential. The following citations show that the central ideas of the experiment were considered valuable, and they were seen to provide a basis for the development of child and family service in the future:
The only effective way to provide proactive child and family services is multi-professional collaboration and service integration… to support this development, we need integrated data systems instead of the fragmented systems that we currently use. In this experiment, we wanted to develop a comprehensive information reserve related to individuals’ capacity to manage their lives. This is the direction in which the data systems will develop in the future. (Strategy manager)

We need to find the good things and notice the things that did not go well in the experiment. There were people who learned from the experiment and from the failures they faced. Now they know that in the future things should be introduced in a different way. That is the learning even though the experiment did not succeed as desired. (Ministerial Adviser B, Ministry of Health and Social Care)

Thus, the interviewees underlined that the unsuccessful experiment was a valuable learning experience for the actors involved in the development work: it made the actors to understand the main pitfalls in the process. However, it was pointed out that the lessons learned need to be seriously and constructively analysed in order to make them as assets in the future experimental activities. The experiences were also considered important for the service provision in the future social and healthcare centres, which are planned as part of an ongoing renewal of social and healthcare in Finland. In the new care model, child and family services are planned in accordance with the key ideas of the experiment, as described by the manager responsible for customer processes:

The service provision in the new social and health care centers is based on the same key ideas we had in our experiment. In the present social and health care renewal, all municipalities are forced to develop their child and family services according to the same model. They need to develop more integrated services. In our city, the experiment helps us to generate preparedness for the renewal. (Manager responsible for customer processes)

11.5 Concluding Discussion

Experimental approaches have been suggested as a successful innovation model in the current conditions of continuous and rapid changes. By integrating innovation and learning, and adaptive trial and error, they include a possibility to tackle the ‘unknown’ more efficiently than the approaches based on strong pre-planning. Experimental development has gained foothold in the public sector, too. Here it faces the specific challenges of administrative bureaucracy, top-down management and strong professional power. On the other hand, information technology creates new opportunities for overcoming professional silos and empowering citizens to participate in the production of services.

Our study examined a case project which aimed at developing a new integrated model of wellbeing in child and family services, based on multi-professional working. In the core of the new model was ‘a common service plan’ to which the user and the service providers commit themselves and a digital platform which functions as their mutual information channel. The project met multiple challenges and was
stopped before the planned deadline. However, it provided useful lessons for corresponding efforts in the future. In Table 11.2, we summarize the central findings that we have categorized on the basis of our theoretical frameworks: (1) the issues linked to the new kind of an innovation process (experimentation) and (2) the specific challenges of the public sector.

As regards the nature of the innovation process, our case was explicitly defined as a project of experimental innovation. It was part of a nationwide effort whose aim was to promote experimental practices in the public sector. However, a systematic process that would merge planning and implementation, according to the principles of experimentation, was missing in the case. Our results revealed that the concept and nature of experimental development were poorly known among the participants, and only the managers were aware of the aim of the project. The central role of learning, which is regarded as the main benefit of experiments in the literature (e.g., Engvall et al. 2001), was not emphasized. There was a contradiction between the basic idea of the integrated model of wellbeing and its implementation: the model highlighted the engagement of employees and service users, but the participation of grassroots professionals was not organized, and consequently the recruitment of users was passive.

The approaches of bricolage (Fuglsang 2010) and effectuation (Read et al. 2009) have suggested adaptive trial and error as the core approach in experimental innovation. They have also highlighted that an experiment is not the same as an unplanned process, but the problem at hand should be carefully framed and contextualized. In our case, the target of the project (customer processes in the integrated model) was well specified, but otherwise the requirements of an experiment seemed unfamiliar to the stakeholders. The applicability of experiment-based development in social care was not discussed, which was a severe shortcoming. Due to the sensitivity of the problems of customers, the use of the trial-and-error approach in this context should have been analysed in detail. Now, it turned out to be too challenging, but reasons behind this challenge remained unclear – lack of knowledge and poor organization of the project were intermingled with the real issues of customer situations. Another vulnerable point was the dependence of the experiment on governmental resources. This made the participants sceptical about the long-term continuity and resourcing of the new practices, which weakened their motivation.

Compared to the general challenges of innovation in the public sector, our case indicated that top-down practices are still strong. The interviewed managers were very eager about the renewal, but they did not acquire commitment from the grassroots level. On the other hand, occupational professionalism – which has been regarded as another typical barrier to the renewal of the public sector – was not an issue in our case. The participants had earlier experience of multi-professional work, and they were positive towards the introduction of new ways of interacting. The local leaders and managers were not, however, capable of seizing this important opportunity. Our case is an illustrative example of the lack of skills in innovation management in the public sector. The focus in the development was on the idea phase; the implementation took place as a ‘voluntary’ process, which made it secondary in the everyday work.
### Table 11.2  Summary of the central findings of the study

<table>
<thead>
<tr>
<th>Theoretical perspective</th>
<th>Research results</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Experiment-based innovation model</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Application in the study case</strong></td>
<td><strong>Challenges in the application</strong></td>
</tr>
<tr>
<td>Merging planning and implementation</td>
<td>The case was part of a nationwide exercise that explicitly aimed to promote experimenting in the public context</td>
</tr>
<tr>
<td>Paying attention to learning during the innovation process</td>
<td>An explicit focus on learning missed</td>
</tr>
<tr>
<td>Engaging users and grassroots employees</td>
<td>The basic idea of the integrated model of wellbeing included the collaboration between employees and service users</td>
</tr>
<tr>
<td>Framing and contextualizing the problem at hand</td>
<td>The target of the development (customer processes in the integrated model) was well specified by the managers</td>
</tr>
<tr>
<td>Fostering adaptive trial and error</td>
<td>Trial-and-error approach was not tested because the actual implementation of the new model was minimal</td>
</tr>
<tr>
<td>Mobilizing necessary resources</td>
<td>The experiment was dependent on governmental resources. Reorganization of the work was not considered</td>
</tr>
<tr>
<td><strong>Issues of the public sector</strong></td>
<td></td>
</tr>
<tr>
<td>Traditional bureaucracy</td>
<td>A top-down approach characterized the project</td>
</tr>
<tr>
<td>Professionalism</td>
<td>The case organization was on the way towards hybrid forms of professionalism, i.e. a combination of occupational and organizational professionalism</td>
</tr>
<tr>
<td>Innovation management</td>
<td>The top-down approach in the experiment focused on the basic idea and did not include systematic management of the innovation process</td>
</tr>
</tbody>
</table>

(continued)
Our case also brought up experiences about the development of digitalization. A central element in the experiment was a digital platform whose purpose was to support the interaction between professionals and service users. However, the tailor-made, price-driven solution was not user-friendly, and the need for a digital tool was not clear to the practitioners. The missing discussion on the specificities of the application area – social care – turned out to be a problem again. In addition to the intra-organizational discussion, a discussion would have been necessary between the local level and the regulatory, governmental level. Our interviews revealed that the views on the interpretation of the confidentiality issues and on the related possibilities of multi-professional information exchange clearly differed between local professionals and governmental actors.

The views between these two levels also differed concerning the whole exercise. Guidance from the responsible ministry is missed despite the nationwide effort. After the change of the government, experimental development was no more a focus in the political agenda. Actually, this discontinuity was realized in our case: after the change of the government, experimental development was no more a focus in the political agenda. A problem at both the local and national levels was the lack of the dissemination plan for the results. Thus, our study confirmed the earlier observation that the spread of public innovations is typically weak (Moulaert et al. 2005). Local actors do not have resources for broader collaboration, and they do not see dissemination as their task. At the governmental level, common structures do not exist because of the administrative silos, and collaboration models that would facilitate learning are rare. In order to promote experimental development, and public innovation more generally, these shortcomings should be tackled. Learning in and between projects, accelerating the dissemination of good practices and common mechanisms and structures for them are required.

Table 11.2 (continued)

<table>
<thead>
<tr>
<th>Theoretical perspective</th>
<th>Research results</th>
</tr>
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<tbody>
<tr>
<td>Impacts of digitalization</td>
<td>A digital platform for wellbeing data was a central element in the experiment; it was targeted to support the interaction between professionals and service users. The need for a digital tool was not clear to the practitioners. The solution was ‘cumbersome’ and together with confidentiality issues caused mistrust.</td>
</tr>
<tr>
<td>Interaction between local and governmental levels</td>
<td>Guidance from the responsible ministry is missed despite the nationwide effort. After the change of the government, experimental development was no more a focus in the political agenda. The practitioners were insecure about the actual impacts of the project, because they had experience on the discontinuity of policy initiatives. This weakened their motivation.</td>
</tr>
<tr>
<td>Dissemination of innovations</td>
<td>Dissemination was not considered in the project plan at the local level and was not discussed in the state-level project either. Organization of dissemination was recognized as a problem by the governmental representatives.</td>
</tr>
</tbody>
</table>
References


Gamification as an enabler of mutual learning in complex health care systems

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Gamification as an Enabler of Mutual Learning in Complex Health Care Systems

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ABSTRACT

In this paper, the authors present a gamified role switching method to promote dialogue and mutual learning in health care organisations facing changes in complex systems. Their research is based on two case studies in which the information exchange between the actors is crucial. 25 stakeholders were interviewed and four workshops were arranged. This study indicates that the gamified role switching method inspired and gave means for the participants to enhance systemic understanding of their organization and to improve dialogue. The role switching method also made the participants to see the situation from the other perspectives and thus promoted collaboration and the change process.

KEYWORDS

Change Management, Role Switching, Societal Embedding

INTRODUCTION

Major challenges are emerging in the health care service system as chronic diseases are increasing and the population is ageing. New ICT solutions and citizens´ increased expectations have led to the situation where the health care system needs radical changes. New innovations and methods are needed to ensure the quality of health care services. However, at the same time, the service as a whole becomes increasingly complex and the needed change is difficult to specify and describe.

New technologies plays an important role in improving the quality of health care services and increasing its efficiency (Escobar-Rodrígues et al. 2012). It has been recognized that introduction of ICT in health care is a social process in which organization is significantly affected. Thus, it is important to understand the effects of ICT and how it can be implemented as a part of social practices (Berg et al. 2003). Noteboom and Qureshi (2014) argue that the adaptation of new technology in collaborative relationships occurs when professionals learn how new technology affects their work environment and relationships. It should also be noted that besides technological innovations new service models have significant impact on the development of a new health care systems.

Identifying the true factors that promote successful organizational change is difficult. Jorgensen et al. (2014) note that one key issue for successful change is the consistent engagement of the employees during the change process. It is also important to notice that in order to promote change, participation of different stakeholders, not only employees of the organization, is needed. There are also methods developed to promote the participation of different stakeholders. A dialogue between organizations, professionals and customers is essential in ensuring high-quality health care services. (Kivisaari et al.2004; 2013) One of the most commonly noted challenges was the underestimation
of the complexity of the organization (Jorgensen et al. 2014). This is likely based on the lack of the systemic view and understanding of the intrinsic complexity of any social system (e.g. organization).

In this paper we examine the change process in organizations and whether change can be promoted through gamified solutions. Gamification is an approach used to make organizational processes more engaging and inspiring. Although the gamified health related applications in general are quite common, using gamification for mutual learning is rarely been an interest in scientific publications. The focus of gamification in our cases has been on improving mutual learning by means of role switching. Mutual learning can be achieved by creating dialogue and opening perspectives of different actors (Kivisaari et al. 2004). In our case studies we focused especially on mutual learning as a form of collaboration. The importance of a systemic view and acknowledging other actors in the management of changing systems has been noted both in the literature (Reiman et al. 2015) and in our case studies.

The following research questions guided this work:

- Can gamified solutions inspire learning and understanding of the viewpoints of other professions and understanding systemic view of the health care organisation?
- Can gamified solutions activate dialogue and mutual learning?

In this paper, we first describe our theoretical framework based on gamification, societal embedding of innovation and role switching. Then we present our case studies and continue to the research results. In the conclusion, we discuss the issues faced in the two cases when promoting dialogue and mutual learning. We end our paper with the final thoughts about our research.

THEORETICAL BACKGROUND

Our theoretical framework is based on theories of gamification, societal embedding of innovation and role switching. These approaches form our starting point in understanding how to promote dialogue and mutual learning in complex organizations. In the approach of gamification, the factors of engagement and inspiration have been examined as well as the transfer of the engaging and inspiring elements from games to organization management. How to create dialogue and promote mutual learning is the key issue in our second approach which is societal embedding of innovation. Role switching on the other hand can help to discover or even overcome biases in our reasoning and decision-making. Seeing and feeling things from another person’s perspective can elicit some of these biases and change the way we understand and reason behavior.

The way we combined these three approaches into a coherent framework, was that we systematically reviewed everything we did, to have enough elements from all approaches. From the gamification perspective we made the change process “addictive”. The reason behind this was that the developed method should be engaging to all participants and encourage participants to participate to change efforts. From the social embedding perspective, we made sure that we had involved the right people to the change process and created dialogue. From the role switching perspective we made it easier for people to change their opinions and lower their biases so that they would be more open to change.

Gamification

Gamification is the use of game-like elements and game-design principles in non-game applications (Deterding et al. 2011). The idea of gamification is to motivate people by means which have been proven to be effective in game environments. Gamification is widely used in marketing and increasingly in different forms of media and education. In practice, gamification may be applied everywhere when the wish is to influenced human behavior.
There are several game-related concepts which sometimes may be overlapping, but should not be confused. These include: play, game, serious game, and gamification. Caillois (1961) has defined a play (and a game) as an activity that is voluntary, separate, uncertain, unproductive, governed by rules and make-believe. Games, serious games and gamification have many similar features like rules, goals and structure (Herger, 2014).

The key difference between game and its “serious counterparts” is that a serious game and gamification are aimed to promote the production of something that is useful also outside the game, whereas a game is played voluntarily “just for fun” because the player finds it entertaining. However, by playing games one may also produce something useful; serious games may also be used just for fun. Thus, the purpose makes the difference – you may have fun in both cases. Indeed fun is a crucial part, as when people experiencing positive feelings, they have the potential to be more creative and think more systemic (Fredrickson, 2003).

Caillois (1961) suggests voluntariness as an essential condition for the desirability of a game. This is a notable consideration when game mechanisms are applied, for instance, in organization management. Gamification is an activity designed to make an existing or forthcoming process engaging and inspiring (Chou, 2015), while a serious game is a specific engaging and inspiring application especially played for serious purposes, e.g. learning something like a game aimed productive outcomes (Djaouti et al. 2011).

Games, game thinking and game design elements have been systematically analyzed in the field of gamification. Chou (2015) has developed an Octalysis framework for the purpose of evaluation and development of gamified applications. Octalysis presents eight core drivers according to which different game elements may be classified. The key drivers are different aspects that may attract a player. The drivers include: meaning, empowerment, social influence, unpredictability, avoidance, scarcity, ownership, and accomplishment. All these key drivers should be taken into account from the viewpoint of the target group in order to achieve successful gamification. There are several different known game elements for each key driver.

Flow theory (Csikszentmihalyi, 1990) is often mentioned as a psychological basis for game playing and gamification. Flow refers to an optimal experience, a state of mind during which people typically experience deep enjoyment, creativity, and involvement in the activity they are performing. The identified supporting conditions for flow state include: goal-orientation with clear goals, binding rules, feedback, application of skill, challenges and provided opportunities. These are well in line with both the classifications by Herger (2014) and certain key drivers in the Octalysis framework. In addition, the optimal flow experience requires an appropriate balance between skills and challenges. Gamification is expected to introduce realisms and support when dealing with abstract and complex topics (Baek & Choy 2014, Day-Black et al. 2015, Corriero et al. 2015). Day-Black et al. (2015) expressed the need to motivate especially the members of “digital” generation (born in 1983 or later), whereas Corriero et al. (2014) refer to declined motivation of older learners. Rojas et al. (2014) has predicted a challenge of using gamification when competition is highlighted and especially in health care. The motivation is likely to diminish for those who cannot perform well in competition. Day-Black et al. (2014) noted that not being a member of “digital” generation limits the use of digital games for learning.

**Societal Embedding of Innovation**

Societal embedding of innovation is a research and development approach developed by VTT in different research projects since the 1990’s. It has been used in Finland to enhance novel health care services and environmentally friendly innovations (Kivisaari, 1999; Kivisaari et al. 2004; 2013; Levasluoto & Kivisaari, 2012). At first, the idea was to contribute to industrial product development processes through increased understanding of its dynamics. The process led key actors to deepen their understanding on the citizens’ and societal needs and requirements, technological possibilities and constrains and market dynamics as well. (Heiskanen et al. 2009).
In the early 2000s the process of societal embedding of innovation was linked to the larger transition management framework and enabled major extensions to this Finnish approach. A multi-level perspective to change has been developed as part of the transition management literature (Geels, 2002, 2004). The multi-level perspective offers tools to understand the dynamics of innovation which are systemic in nature. From the multi-level perspective interplay between landscape, regime and niche levels is emphasized and is essential for the change.

Societal embedding (Kivisaari et al. 2008) aims at facilitating and initiating new innovations in a multi-actor network. An important objective is to create a dialogue between different actors and give them a possibility to create a shared understanding of the elements of the solution. By opening up the perspectives of the different actors societal embedding aims to produce mutual learning. The approach gives information about the needs of identified actor’s, worries and conceptions of the discussed change. An important aim is to identify promoting and preventing aspects of different actors and bring them to shared discussions. The approach is based on thematic interviews, observation and workshops. The aim of the workshops is to discuss all these different opinions, create more in-depth understanding of the change and create collaboration and trust.

Social embedding of innovation is one of the key theoretical approaches in this paper as it emphasizes the role of creating dialogue between actors. In our research, the role switching method is also based on the experiences of social embedding of innovation. The aim of the method is to further develop the approach as an innovative and inspiring method.

Role Switching

There is a difference between thinking for someone else and thinking as someone else. The former is to look at the situation of another. The latter is to look at the situation as your own, but as someone else. This is role switching – playing and understanding the situation from someone else’s perspective. From the perspective of someone else, one is not only able to see a different part of a complex situation but also witness one’s own behavior from the other side of the interaction. Requiring people to play a role in which they express views that do not necessarily correspond to their personal opinions can facilitate internal change, promote novel dialogue, and bring new insights.

Janis and King (1954) studied the influence of role playing on opinion change. They found that verbal conformity elicited by role playing can significantly influence the acceptance of new beliefs. They also showed that an improvised restatement – reformulation, illustrative examples, or invented additional arguments – has a greater effect than mere repetition of a persuasive communication (King & Janis, 1956).

Greenwald (1969) suggested that the effectiveness of role playing in inducing opinion change is largely the result of inducing a situation where one evaluates information opposing their own position in an unbiased fashion. People have a tendency to see, interpret, favor, and recall information in a way that confirms their beliefs and places less emphasis on alternative possibilities (Nickerson, 1998).

Innes and Booher (1999) suggest that, even in intractable disputes, role playing allows the letting go of actual or assumed constraints and introduction of new conditions and possibilities. It allows participants to consider strategies that are not normally acceptable in their roles and to build consensus in a way that is both stimulating and engaging. March and Olsen (2006) state that in most situations we take reasoned action by trying to answer three elementary questions: what kind of a situation is this, what kind of person am I and what does a person such as I do in a situation such as this? When role switching puts us in the shoes of another person, we are able to make references from the new role. It can give us novel ideas on how to act in new roles and why.

An actor’s view of the causes of their behavior often differs from those held by outside observers (Jones & Nisbett, 1972). The actor has a tendency to emphasize environmental conditions. The observer on the other hand has a tendency to emphasize personality characteristics of the actor as causes of behavior. By assigning an observer to the role of actor, or simply having one envision the possibility that they themselves might be in the same role of whom they are judging (Lee & Hallahan, 2001), the
situation and what led to it can be seen in a different light. This way, role switching has the potential to even foster social intelligence (Goleman & Boyatzis, 2008) by generating a real interest and skill to see the feelings of those people needed for cooperation.

**METHODOLOGY**

In the empirical part of our paper we focus on two cases. In our first case, a university hospital was introducing automated medication storage units. Changes in medication information systems, the medication process and in operational culture were needed due to this coming change. In the second case, a clinical pathway for geriatric patients was implemented in a central hospital. In order for the clinical pathway to work as planned, changes in operation models are needed in the related private and public social and health care organizations.

The study is based on 25 interviews and four workshops with gamified and role switching aspects. The schedule and the number of participants in the interviews and workshops are summarized in Table 1.

In the first workshop, selected board games were played together with health care personnel and researchers in order to get familiar with different game ideas and mechanisms and to get feedback on what kind of gamification may be appropriate for health care personnel. In the fourth workshop the new game concepts to support the medication process were brainstormed in cooperation with health care professionals and researchers. The objective of the session was to get ideas on how to further develop the role switching approach.

The interviews and the second and the third workshop are introduced in chapter 3.1 and 3.2 and are within the focus of this paper as they were key elements in creating the gamified role switching method. In between these mentioned five activities the group of researchers, together with the representatives of the two case organizations, carried out the analysis and development work is several sessions.

In both of our cases, creating dialogue and cooperation, as well as seeing familiar situations from another perspective, were important aspects of promoting change processes. The interviews gave an overview of the situation after which it was possible to start creating the workshops. The interviews also worked as a channel where employees and other actors could have their voices heard concerning the upcoming changes. The gamified role switching workshops were very similar to each other and were just modified to answer the needs of different cases. As the gamification process and Octalysis framework suggest, an extensive investigation of the key development needs were identified through interviews and discussions with the case organization representatives. The gamification elements for these needs were then chosen and they appeared to be role switching, storytelling and some visual elements such as playing board and cards.

We summed up the interviews and the workshops by identifying visions and challenges for the change (Tables 2 and 3). Vision and challenges provide information for the organization on how to proceed with the implementation work and communicate the results to all employees.

<table>
<thead>
<tr>
<th>Workshop 1: Gaming</th>
<th>Interviews</th>
<th>Workshop 2: Case 1</th>
<th>Workshop 3: Case 2</th>
<th>Workshop 4: Brainstorming game concepts</th>
</tr>
</thead>
</table>
| May 2014, 15 participants (both cases) | Case 1: May 2014, 9 interviews  
Case 2: Spring 2014, 16 interviews. | Case 1: September 2014, 10 participants | Case 2: December 2014, 9 participants | Case 1: March 2015, 16 participants |
Interviews

In the first case, we interviewed nine health care experts that work with renal patients. In the second case, we interviewed 16 social and health care experts from the organization working with geriatric patients. The semi-structured interviews took place in spring 2014. The interview questions were divided into five themes. These were current situation, issues related to quality, safety and efficiency, previous development projects, attitudes and thoughts about the change and visions. The interviews were recorded and transcribed and we used QSR NVivo qualitative data analysis software for analyzing the results. We carried out the analysis by performing a thematic analysis of the relevant research topics and identified the common responses of the interviewees.

Gamified Role Switching Method (Workshops 2 And 3)

Our gamified role switching method was utilized in two workshops held for both case organisations. In the first case, ten health care experts from the pilot ward, other wards, pharmacists and project development experts participated in the workshop. The participants represented all the key positions

Table 2. Identified vision and challenges in Case 1

<table>
<thead>
<tr>
<th>Achieving the goal together</th>
<th>Patient</th>
<th>Pharmacist</th>
<th>Nurse</th>
<th>Doctor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vision</td>
<td>Is familiar with medication and can communicate it</td>
<td>To become one of the key professionals</td>
<td>Implementing the patients’ medication prescribed by a doctor</td>
<td>Prescribing and monitoring up-to-date medication</td>
</tr>
<tr>
<td>Challenge</td>
<td>To become an active patient</td>
<td>Readiness to adopt a new role, resources, attitudes of other professionals</td>
<td>Clear and practical instructions followed by all professionals</td>
<td>Practical and doable instructions followed by all professionals</td>
</tr>
</tbody>
</table>

Table 3. Identified vision and challenges in Case 2

<table>
<thead>
<tr>
<th>Better patient care results and ease of workload by enhancing the information flow between actors</th>
<th>Patient</th>
<th>Emergency care team</th>
<th>Nurse</th>
<th>Doctor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vision</td>
<td>Will get the care she/he needs and her/his needs are being heard</td>
<td>In addition to emergency care, the team informs the hospital of all relevant information</td>
<td>Knows how to implement the clinical pathway for geriatric patients in comprehensive care</td>
<td>Knows how to implement the clinical pathway for geriatric patients</td>
</tr>
<tr>
<td>Challenge</td>
<td>Patients as a passive participant in care processes</td>
<td>Information is unavailable</td>
<td>Clinical pathway is not familiar and information blocks appear</td>
<td>All the needed information is not available</td>
</tr>
</tbody>
</table>
and professions involved in implementation of the automated medication storage units. In the second case, the participants represented nine key actors related to the clinical pathway.

The aim was to promote the change of practices as well as to get feedback about our gamified role switching method. Many changes would be required, many which were not all positive for all employees. It was important to share opinions and the reasoning behind them. We aimed at encouraging participants to discuss their opinions more freely and also to help the change process by making participants look at the everyday situation from another perspective. An additional aim was to create dialogue between participants of the elements of the needed solutions.

The gamified role switching methods involved producing a story of the patient’s care history by the participants. The story was based on maximum ten events which were chosen by the participants. After that participants then picked randomly one card which represented one of the related professions (e.g. pharmacist, patient, doctor and nurse). Thinking about each event from the perspective of the given profession was then required of the participants. Questions in the profession cards guided the work. The guiding questions were about how the represented professional would perform in this situation, what are the obstacles to acting in a new way and what are the benefits of this new way.

Feedback was collected from the participants via a questionnaire in order to evaluate our workshops and also to evaluate our gamified role switching method. All participants returned an either fully or partly filled form.

**CASE CONTEXT AND RESULTS**

**Case 1: Changes in Processes and in Culture Are Needed to Implement an Automated Medication Storage Unit**

Our first case organization is a university hospital in one of the biggest cities in Finland. The university hospital is in the process of implementing new automated medication storage units, and because of this reform changes in the medication information system and medication practices of the related professional are needed. The changes affect physicians, nurses, pharmacists and patients as well as their relationships in different ways. A ward for renal patients is the pilot for the implementation of the automated medication storage units.

The change to using an automated medication storage unit is not straightforward as it requires changes in practices and in operational culture. Responsibilities of doctors and nurses need to change to some extent as well as the sharing of responsibilities between units. One example of the change that needs to take place before implementing the automated medication storage unit is the way patient medication data is processed.

**Results from the Interviews and Workshop**

From the interviews, we identified four themes important for the change process. First one was working practices. The interviewees were aware that the official procedures are not followed in all cases and places. There were concerns about the idealistic requirement to always strictly follow the rules, even when doing so was known to be impossible. Instead, they suggested focusing on finding the correct solutions whenever possible. The interviewees showed a generally positive attitude towards pursuing improvements, but also noted that actual change takes place slowly. The consistency of practices within a hospital was regarded as an important factor for fluent and safe operation of the system as a whole. We also identified values which were important for the professionals. These were expertise of health care, patient orientation, active participation to development processes and minimizing errors.

Third, information systems and fore specifically up-to-date information on the medication and its documentation in the patient information system was regarded critical. However, there were many issues which were preventing the use of current systems as planned. Fourth, there were different expectations and concerns regarding the change. The automated medication storage unit was
anticipated to improve patient safety and medicine control, enhance the conditions for work, clarify procedures for medication activities, and reduce costs. However, there were concerns about the poor usability of the information systems, excessive rigidity of the new system, potentially vanishing knowledge about medicines, increasing work load, unpredicted problems in the initialization phase and concern about whether a critical medicine will be available if technical problems appear. The lack of information on future changes raised concerns in general.

For the workshop, the participants expressed that it promoted collaboration between professions. The role switching method was seen useful, as it forced the participants to look at common situations from a different perspective. It unveiled how little other professions’ duties are understood, contrary to the expectations of some participants. The participants thought that this way you gain insight into the reasons for certain actions in different professions and organizations. The reasons for acting in a certain way were not always familiar to participants coming from another profession.

Due to the gamified aspect, the workshop was experienced as inspiring and refreshingly different. In addition, the participants felt that they had a chance to influence the change process by participating in the workshop. For the participants, the workshop was in some sense demanding, because it required full concentration. The task that was given was not immediately understood by the participants. The workshop produced new ideas and some concrete tools for the participants. Identifying risks and obstacles from different perspectives was an important outcome of the workshop. The workshop also increased understanding of the upcoming change, opened up new perspectives and included positive feelings towards the change. Multiprofessional collaboration was one of the things that the participants considered valuable.

We summed up the interviews and the workshops by identifying visions for the change as well as challenges that may prevent the change from happening (Table 2). The vision and challenges were identified and summarized to help the organization’s implementation work.

The top vision represents the attitude that only by working together will the change be possible to achieve. Pharmacists were identified as a new important actor in patients’ care when using medication in a hospital renal unit. Pharmacists could have new tasks which would support nurses’ and doctors’ work and this has the potential of clarifying patient care. For the pharmacists the role is new and it requires learning and resources. Patients on the other hand should adapt to a new role, where the medication information should be clear at all times. This requires being active and participation by the patient. The nurses would like to have clearer instructions which are followed by everyone. From the perspective of doctors the change causes potentially more work and is more time consuming. However, if the medication information is up-to-date, the doctors’ work will become easier eventually and patient care would improve.

Case 2: Using a Clinical Pathway for Elderly Patients
Requires Cooperation and New Operation Models

Our second case organization is a central hospital which offers specialized health care for 13 municipalities. In the beginning of our study a new clinical pathway was about to be launched for geriatric patients. The clinical pathway is a document that describes best clinical practices for geriatric care. It had been produced in cooperation between the hospital, primary health care, social sector actors and patient representatives. Putting together a clinical pathway was a great challenge, because the information was scattered and different units and organizations had different ways of working. A number of employees and customers participated in the work of gathering and formulating information to form the new clinical pathway. The idea behind this development work was to make the customership of the geriatric patient more flexible, effective and safer.

Results from the Interviews and Workshop

Three themes were identified which were the most important for the change process. First, the utilisation of the clinical pathway was difficult, because the document was too long and complicated.
The interviewees had a common view that information about the clinical pathway was collected and the pathway was created in a participatory way acknowledging all different viewpoints. However, because of the profound nature of the work, the document became difficult to understand. Second, the expected impact were seen to come mostly to the patients. The professionals did not see so many advantages for social and health care professionals if the new clinical pathway document would stay as it was at the moment of the interviews. The interviewees thought that the clinical pathway could be more beneficial to the professionals if it would be divided into smaller, more focused pieces. Third, the implementation implementation was also challenging because there was not any single unit that was responsible for the clinical pathway or its implementation. The problem was that in order for the clinical pathway to work as planned, its use in every organization would be required. Because the benefits of using the new clinical pathway were so difficult to picture, it was likely that the implementation was not going to be easy.

The participants of the workshop thought that the workshop was inspiring and promoted collaboration. Because the participants were from different units and organizations, they felt that truly different opinions and aspects were discussed. Although collaboration and discussions were good, some participants felt that solutions to the identified problems were not found. The workshop produced new ideas, collaboration, thoughts on the issues needing improvement and an altogether broader understanding of the change. The workshop also revealed some critical points of the change process which were not recognized earlier. Our role switching method was enlightening for the participants and it was appreciated as a tool for see things from a different perspective.

Visions and challenges are summarized in Table 3, which was created in the same way as the first workshop.

The top vision in the second case represents the idea of what the benefits of the new clinical pathway are for geriatric patients and what is required. In the vision, patients will get the care they need and they are also seen as an equal partner in care. The role is new, especially for elderly people who are not used to voicing their needs. The emergency team will pay much more attention to the information that is needed by the hospital. The problem is that all the information is not always available. For the nurses it is important to know the clinical pathway so that the geriatric patient will get the special care that she/he needs. Geriatric patients’ special needs are not known very well, which could cause problems in later phases of the treatment. It is important for the doctors to use the information which has been gathered earlier to make the right care decisions.

**DISCUSSION AND CONCLUSION**

In our first case, new automated medication storage unit was planned to be implemented in a hospital pilot unit. In the second case, a new clinical pathway for geriatric patients was about to be launched and implemented. In our study, we aimed at promoting change in the two case organizations and also to develop a new gamified role switching tool for promoting dialogue and mutual learning. For this purpose we interviewed 25 social and health care professionals from different organizations.

In many of the cases, the interviewed experts did not perceive their role as being a part of a complex health care system, where the actions of one professional affect the work of others and thus the operation and performance of the whole system. Noteboom and Qureshi (2014) have noted that successful collaboration requires social adaptation from professionals. The burden of learning the new rules and patterns of interactions and adapting operations to the new situation creates barriers that inhibits the diffusion of new operations models and technology. In our study we develop gamified role switching method to promote learning and collaboration. The method was based on societal embedding of innovation (Kivisaari 2008) and the aim was to develop the method towards more inspiring approach were different aspects of motivation were better understand.

The two gamified role switching workshops, together with the interviews, were within the focus of our paper. The aim of our workshops was to create dialogue and cooperation and provide a possibility
for the participants to see familiar everyday situations from another profession’s perspective. This way we aimed at mutual learning and thus promoting the change processes in the organizations. We summarized the visions and challenges identified from the interviews and the workshops to provide information to the organizations and help them steer the implementation work.

Our results indicate that our gamified role switching method inspired and gave means for the participants to enhance systemic understanding of their organization and to improve dialogue. The health care professionals that participated in gamified workshops felt that they are involved in the change processes and that their opinions have an effect. Gamified elements in the workshops made the atmosphere inspiring and opened minds to new viewpoints. The role switching method made the participants see the situation from other perspectives and thus promoted collaboration and the change processes. The workshop and the discussion between participants did not offer solutions to all the identified problems. However, solving all the identified problems was not the aim of the workshops, but rather to identify the problems, to offer different perspectives and to bring them to discussion.

From experience gained during our workshop we learned that some of the participants from the health care organizations want to see immediate benefits of the event or exercises. The problem in that is that our gamified solution aims to promote dialogue and mutual learning. The benefits of enhanced collaboration are difficult to demonstrate at that point. The experienced joy from the event may even emphasize the experience of missing immediate usefulness. A quite common belief serious professions is that “what is fun cannot be useful”. We need to develop the approach so that the participants more clearly learn the benefits of playing and having fun (Fredrickson 2003) are.

It has been noticed that not being a member of “digital” generation limits the use digital games for learning (Day-Black et al. 2014). In our case the target group mostly represented “non-digital” generation. By using non-digital gamification we showed that gamification may be used also to inspire older generations as Corriero et al. (2014) suggested. Our study also shows that engaging gamification can be done without the competitive element and can be used in health care organisations.

Our study indicates that it is useful to simulate being in the roles of others to enhance the understanding of a complex system where the actions of one professional affect the work of another. The gamified method was shown to be an inspiring and accepted tool for promoting collaboration and developing new service models which involve different health care professionals and patients. We propose that using this method can help to reveal and deal with socially driven issues related to the introduction of new systems and services. As many organizations struggle with various obstacles when attempting to improve their activities, gamified solutions can be a tool for assisting the implementation of changes.
REFERENCES


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Digitalization as an Engine for Change? Building a Vision Pathway towards a Sustainable Health Care System by Using the MLP and Health Economic Decision Modelling

Leväsluoto, J., Kohl, J., Sigfrids, A., Pihlajamäki, J., & Martikainen, J.

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Digitalization as an Engine for Change? Building a Vision Pathway towards a Sustainable Health Care System by Using the MLP and Health Economic Decision Modelling

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Abstract: Grand social challenges, such as type 2 diabetes (T2D), are increasing, which creates sustainability problems for health care service systems. To reduce socio-economic burdens, changes are required in the socio-technical system. However, there is an uncertainty of the most cost-effective policy action that can create sustainability while providing health benefits. To find potential solutions to these challenges, the multi-level perspective (MLP) and health economic decision modelling was used to study socio-technical change and project potential health economic consequences of different scenarios. The study focuses on creating a vision pathway for reducing T2D in Finland. In total, 23 interviews were carried out and the results were analyzed utilizing the MLP model. As a result, five themes towards prevention of T2D were identified. Digitalization was found to be a cross-cutting theme for preventing T2D and was thus taken as the object of study and the main focus of this paper. As a result, this paper reports on the opportunities and barriers for using digital tools in a transition towards T2D prevention. A health economic decision modelling revealed that the highest expected savings could be obtained by prioritizing prevention programs based on T2D risk. Finally, the model was converted into a web-based online tool by combining vision pathway, transition-focused storylines and forward-looking health economic scenario analysis to give the policy makers an overall picture of the needed societal changes and support the impact assessment of alternative policies in a case of T2D prevention in Finland.

Keywords: multi-level perspective; transition studies; health economic decision modelling; vision pathway; transition pathway; health promotion; type 2 diabetes

1. Introduction

In Europe, chronic diseases cause an estimated 86% of deaths and 77% of illnesses [1]. Type 2 diabetes (T2D) is a chronic disease with wide social and economic impact. Around 143 billion euros are spent on diabetes treatment and its complications each year in Europe, and this figure only includes direct costs of the disease (i.e., productivity losses due to morbidity and mortality caused by T2D are not included in this figure [2]). In Finland, more than 300,000 people were diagnosed with diabetes in 2016, and currently the estimated annual direct costs of T2D are around 1.5 billion euros [3]. Assuming that the same trend in the annual number of new people with diabetes diagnosis continues, there will be more than half a million Finnish people with diabetes by the year 2030. The incidence of T2D is strongly associated with the ageing of populations, lifestyle factors, and socioeconomic status. Preventative actions such as healthy lifestyles have proven to be effective in reducing T2D [4,5]. However, embedding these actions in health care organizations has been difficult, even though prevention has been shown to be the more desirable option from a health care payer and a societal perspective (i.e., less costly and more effective) [6–8].
The growing number of T2D creates pressure for the sustainability of the health care system and a need for a change. Sustainability can be defined as “... development that meets the needs of the present without compromising the ability of future generations to meet their own needs” [9]. Jameton and McGuire [10] define sustainability in health care through three key balancing factors: the needs of patients, economic concerns and environmental costs. Fineberg [11], in his definition, emphasizes affordability for patients, employers and government, and acceptability and adaptability of the health system. Sustainability in the health care sector can be tied to the UN sustainable development goal of “ensuring healthy lives and promoting wellbeing for all at all ages” [12], which cannot be achieved without finding new ways to reduce the socio-economic burden of chronic diseases to health care services. Setting a goal on good health and wellbeing for all requires a systemic understanding of health care systems and supporting policy makers to develop such perspective to help with complex decision making.

Digitalization refers to the use of digital technologies in the context of production and delivery of a product or a service that allows organizing, producing or delivery of health care services in a new way [13] and has created promising opportunities for change in the system. Virtanen and Stenvall [14] argue that digitalization of our society has had a significant impact on health care and the health care system. It affects ways of working, processes, resource allocations, policies, and the way health is understood, experienced and measured. They [14] also point out that different sensing devices, mobile apps and web services enable citizens to play a more active role in maintaining their health. For lifestyle-related diseases, collecting information about individuals’ daily activities could motivate them to change their behavior. For example, Tatara et al. [15] notes that mobile communication device interventions to support diabetes management have been effective. New apps and services based on personal data have the potential to prevent and help manage diseases [15]. Digitalization was chosen as the main focus of this study due to the fact that the qualitative analysis found it to be a cross-cutting element for the various ways of reducing T2D.

As stated above, there are possibilities to promote change, but there are also structural barriers. There is a need for a transition towards a society that promotes preventative action in health care and not only treats diseases when they occur. Supporting a transition towards more sustainable health systems necessitates new methods for understanding potential actions and their impacts. For this purpose, this article draws on transition research methods to conceive of the changes required for digital technologies to be developed and adopted for purposes of sustainable T2D prevention in health care systems. Facilitating the change, this article also aims to develop and apply a health economic modelling tool to support decision making in this transition.

Transition studies and the multi-level perspective (MLP) form the theoretical bases of the study. The MLP introduced a transition pathway typology in 2007 [16], and it has been used to characterize the overall course of development of innovation and frame the analysis of occurred transitions. In recent years, there have been demands that transition studies should initiate and catalyze transitions and not focus only on describing them [17]. Köhler et al. [17] have noted that transition scholars should focus on system innovation in-the-making and develop forward-looking analysis and policy-relevant scenarios and toolboxes. However, the complexity of the transition challenges anticipating ex ante impacts of the changes and the research in transition studies has thus avoided formal modelling and quantification [18]. Policy makers tend to favor quantitative elements [19] and bridging quantitative and qualitative elements to forecast future impacts has become an important research stream in transition studies even though there are identified challenges of using the methods [17,18].

This article is produced in a Finnish Strategic Research Council project StopDiabetes—Knowledge based solutions 2016–2019. The aim of the project has been to empower individuals with increased risk for type 2 diabetes in adopting and maintaining healthy lifestyle, and to achieve this by combining individual level intervention with changes
in living environment to support healthy behaviors, and by identifying societal barriers and facilitators for the implementation. Additionally, the project answers, how a healthy lifestyle can be supported by individual level solutions utilizing digitalization and by altering living environments to make healthy choices preferred and easier. The active cooperation with the public sector and the key actors of civic society will ensure direct integration of developed solutions into Finnish society.

The study aims at creating a vision pathway towards prevention of T2D in Finland and to develop transition-focused storylines and forward-looking scenarios to demonstrate the needed changes and the expected national savings potential of T2D prevention in Finland. It thus answers to the identified research needs in transition studies (e.g., initiating and catalyzing transition and developing forward-looking analysis and policy-relevant scenarios).

Based on the previous studies [13–15], this study assumes that digitization and the use of digital tools can have positive effects on the system change. However, it should be noted that the change towards prevention of T2D is systemic, meaning that there should be changes in different levels of the society, e.g., in organizations, practices, services and in technologies. Due to the systemic nature of change, this study presents a vision pathway for prevention of T2D where the needed changes in different levels are identified. However, while conducting the study, it became evident that due to the methodological differences between transition studies and health economic decision modelling, it was necessary to focus on a more detailed theme than the entire transition. The interviews guided the research to focus on the theme of digitalization, as it was present in every identified theme and was situated as a cross-cutting theme. Moreover, digitalization can also be seen to intertwine to the changes required in socio-technical change. Digitalization or the use of digital tools is not understood in this study as a way of solving the problems by itself, but as a part of the possible solution.

The basis of the vision pathway is Geel’s [20] MLP model, which pictures the current system that consists of landscape, regime and niches where the aim is to understand the dynamics of systemic change in socio-technical systems. The study presents Finland’s current system (with the focus on prevention of T2D) in the MLP model and develops a vision pathway where the identified needed change-themes are placed in the MLP model’s different levels. The study calls the created pathway a vision pathway instead of a transition pathway that is most commonly used in transition literature, because it is focused on forward-looking analyses instead of analyzing past transitions. Through transition pathway literature, it analyzes the current state of the transition in the Finnish health care system towards a more preventative system. For the development of the vision pathway, interviews of a variety of actors that operate inside or close to the health care system were carried out. The results from the interviews are placed in the MLP to form transition-focused storyline that identifies the barriers and facilitators of change.

In addition to the vision pathway and transition-focused storyline, a health economic decision model was created to answer to the needs identified in the transition literature (e.g., catalyzing transitions). The previous studies [17,18] have suggested to use quantitative modelling in incremental innovations with sufficient historical data on impacts of changes in a sufficiently stable system. The challenge of modelling a complex transition was also noted in this study through the lack of data required in the development of a very complex health economic decision model. For these reasons, and the findings from the interviews highlighting the importance of estimating impacts of prevention, one theme was selected from the vision pathway to develop a health economic decision model. The theme was a cross-cutting theme of digitalization. The study presents three health economic scenarios of expected economic outcomes of a digitally supported prevention program in different risk-based target subpopulations.

In order to promote developments and findings among different stakeholders in the society, a web-based online tool with interactive quantitative modelling and qualitative vision pathway was developed. Reports produced by the online tool include the user-defined projections of expected economic impacts of preventive measures in a selected
target population, as well as the vision pathway and transition-focused storylines towards the change to reach those expected economic impacts and promote transition towards prevention. Integrated quantitative modelling and qualitative narratives aim to support policy makers to understand the expected impacts of preventing T2D in their target populations, as well as the idea of needed changes in the system.

The paper is structured as follows: In the second section, the theoretical background of our study is presented. The third section describes the context of the empirical study and the methods for data collection and analysis. In the fourth section, the results are presented, followed by conclusions in the last section.

2. Multi-Level Perspective and Health Economic Decision Modelling as a Theoretical Framing of Digital Socio-Technical Change

2.1. Digital Technologies Create Promises in Changing the Health Care System towards Prevention

Digitalization has had an impact on health care since the mid-20th century, and digital disruption has become a phenomenon of the 21st century [21]. The European Union report of EXPH [22] defines digitalization in health care as “the use of digital technologies in the context of the production and delivery of a product or service”. Such digital technologies allow health care services to be organized, produced and delivered in new ways. Authors of the report note that digitalization affects many aspects of health care systems in terms of structure, culture, professions, treatments and outcomes. They also acknowledge that this is in some occasions referred to as “digital transformation”, which indicates that health care services and systems are in a transition in which more health services and processes will be digitalized. Innovations change health care processes and impacts health care systems in a way that can be described as fundamental.

In their study of digital transformation in healthcare, Kraus et al. [21] note that research in this area has focused on operational efficiency by healthcare providers, patient-centered approaches, organizational factors and managerial implications, workforce practices and socio-economic aspects. Although many changes have taken place in the health care sector, digitalization can be expected to have even more profound changes in health promotion, prevention, primary care, specialized care, long term care, social care, and self-care in the future [22]. The EXPH report [21] highlights the importance of evaluating the impacts of digitalization to health care systems, and whether digital health services contribute to health system goals in an optimal way. Nonetheless, the report note that specific forecasting is difficult, certainly when it comes to the expected costs and benefits of new technologies.

Digitalization can also change the way preventative actions and health promotion is implemented. Lupton [22] highlights the change that has happened through mobile digital devices and applications that offers new ways of monitoring, measuring and visualizing health. In her study, she notes that there are different terms used for using digitalization in health care. She notes that digitized health promotion is a subset of digital health technologies and it includes digital devices, tools and platforms. Previous research has shown that citizens have better motivation to take care of their health if they have better control over their personal data [23]. Mäkinen [24] has argued that better control can also be seen as a way to empower citizens. These research results have created promises for a more efficient and sustainable health care system. However, the discussion of digital health promotion technologies is dominated by technical solutions and rarely focuses on the issues of social, cultural, political or ethical dimensions [22].

Producing new digital services has faced challenges, and the new system has not yet emerged [25]. For example, elderly citizens often have low computer skills, which makes it difficult to function well in an era where technology is increasingly being used in health care [26]. Citizens also have fears of privacy, especially when the information gathered is sensitive [27]. In digital applications, users voluntarily expose their personal data, which is then simplified to easily understandable modes such as graphs and charts. This intimate and long-term data is interesting to companies, health agencies and governments [28]. Lupton [29] notes that users judge the information stored in their apps to be private, and
had during the publication of the research in 2014 only recently started to realize that the developers use this information for their own purposes.

Another problem is that even though modern technology offers new solutions for managing daily activities, only a few health-promoting applications have reached widespread use [30]. In addition, changing behavior is very complex even when the applications are taken into a use. However, Kaipainen [30] adds that applications can contribute to improved well-being and support behavioral changes as long as they are simple, attractive and easy to integrate into everyday life. Harjumaa et al. [31] studied the use of an internet-based lifestyle intervention for people at risk for type 2 diabetes, which was designed to support formation of healthy habits and to explore its user engagement during the first 6 months of a randomized controlled trial (RCT). Their study showed that this type of intervention can be delivered to large groups of middle-aged and older adults, many with limited experience in digital app use, without additional user training. Their study also showed relatively good engagement of users, but did not report if the weekly engagement was enough to change the lifestyles of the participants.

2.2. Finnish Health Care System and Multi-Level Perspective (MLP) Explaining the Socio-Technical Change

The creation of the vision pathway and health economic decision model is created in the context of the Finnish welfare state and public health policies. In Finland, the public sector actors play an essential role in defining the dynamics of health care and welfare services [32]. The health care system in Finland is largely based on public sector services that are financed through tax revenues. Municipalities are responsible for maintaining the health care services, and the services supporting healthy lifestyle. Any individual living or working in Finland pays a tax-based social insurance that ensures the right to use public health services and occupational health care [33]. Even though there is a secured access to health care service, lifestyle-related non-communicable diseases are increasing in Finland. This is unfortunate since scientific evidence shows that lifestyle interventions are effective in the prevention of non-communicable diseases, such as T2D [5,34,35]. This can to a large extent be explained by difficulties in creating efficient incentives to integrate evidence-based intervention models into the health care system.

To understand the realities of transforming a system, a multi-level perspective (MLP) is used as a theoretical starting point. MLP has been developed and presented in socio-technical change-related literature [20,36–39] to explain the dynamics of transformation and transition in different systems. The perspective emphasizes the interactions between actors, resources, technologies, practices, and rules as origins of change and stability and provide an understanding of the dynamics of systemic change and system innovation.

MLP stresses that systems change through the interplay between landscape, regime and niche-level processes [37,39]. Socio-technical landscape refers to relatively stable, slowly changing factors such as cultural and normative values, long-term economic developments and societal trends. Changes in the landscape create pressure for change in the system. The socio-technical regime refers to established practices in the existing socio-technical system. It includes institutions, infrastructure, regulation as well as organizational and social networks that structure and organize a particular societal function such as health care. Regimes tend to generate incremental innovations, while radically new innovations are generated in niches. Radical new innovations need protection because their cost efficiencies, technical performance and usability often need improving. Niches provide locations for experiments and learning processes, and space to build social networks, which support innovation [32,37,39]. Geels [37] explains that radical innovations break from the niche-level when the external circumstances are right. If the practices and structures in the regime level are not compatible with the landscape, it destabilizes the regime and creates a window of opportunity for niche innovations.

The MLP facilitates systemic identification and analysis of the facilitators and barriers of change. It makes the facilitators and barriers transparent and explains the interdependencies and interactions. By revealing these mechanisms, it helps to understand the needed
change and steers the change management. Through socio-technical change theories, it is possible to understand the pressure of developing new innovative solutions to existing problems (e.g., prevention of diseases).

Transition studies has focused mostly on sustainability issues and environmental problems such as climate change, and most of the publications that focused on the future directions are directed towards these issues. Even though environmental problems are in the heart of transition studies, Köhler et al. [17] notes that there has also been an expansion to other societal domains. According to Köhler et al. [17], this development and the interest from policy makers to use transition studies to promote change in the society has challenged the transition scholars to focus on system innovation in-the-making and develop forward-looking analysis and policy-relevant scenarios and toolboxes. What is new in transition studies is the request that research should not only be for describing transitions, but for initiating and catalyzing them.

2.3. Transition Pathways

In MLP literature, transition pathway typology has been discussed since 2007. The typology characterizes the overall course of development of innovation and gives a frame for the analysis of occurred transitions. Based on Geels and Kemp [16], Geels and Schot [39] have analyzed change in socio-technical systems and proposed pathways of reproduction, transformation, de-alignment and re-alignment, technical substitution and reconfiguration. They also note that transition pathways are not deterministic; for example, a transition may start with one path but shift to others.

Geels [40] has also reformulated the transition pathway typology through the lens of a local logic that views decisions, actions or events as part of particular developments and that pays particular attention to the actors involved. In the reproduction pathway, the system is stable and only incremental innovation occurs by incumbent actors. Landscape pressure exists in the transformation pathway, but the niche innovations are not developed enough to transform the system. Incumbent actors reorient towards innovations, which may be incremental or radical, leading to transition. In the de-alignment and re-alignment pathway, the existing regime is faced by external shock causing major problems. Incumbent actors lose faith to the system, causing struggles between actors to fill in the existing “vacuum”. Multiple and embryonic niche innovation will compete, and eventually one niche innovation becomes dominant and forms the core for re-alignment of a new regime. The technological substitution pathway starts with a specific shock or disruptive change from the landscape in a moment when niche innovations are at a sufficient level. The pressure leads to major regime tension and creates a window for opportunity for radical niche innovations. These innovations may even come from outside of the sector.

Others have also contributed to the discussion of transition pathways [41–43]. Foxon [42] has created transition pathways to meet the challenge of connecting actors to socio-technical change. These transition pathways focus on the action of the actors and the governance arrangements that frame these choices. The pathways start from the present and aim to describe how possible futures could evolve from the current situation. The pathways aim to show, from the different lenses of government, market and civil society actors, how different framing of the issue could lead to different outcomes.

Hammond et al. [41] have also created transition pathways for a more electric future. They see transition pathways as a form of socio-technical scenarios, which explore the future development of a system. Their analysis shows that these scenarios could have a significant role in helping to build consensus between actors for their shared vision and action needed for the change. However, Foxon [42] argues that developing transition pathways goes beyond the existing work of developing socio-technical scenarios by paying attention to economic aspects, the role of actors and interaction of social structures and technological elements. He also notes that more research is needed to estimate the expected cost of different pathway options.
In their paper, Papachristos et al. [43] focused on the interaction taking place among sociotechnical systems during transitions. They noted that the study of multi-system interaction faces challenges of (1) defying the boundaries of the system under study and (2) identifying mechanism, processes and actors influencing the evolution of a socio-technical change. Actors outside the system are involved in transitions, but Papachristos et al. [43] notes that they have not attracted much interest. Niches and regimes of external systems that influence transition are not highlighted either.

Rosenbloom et al. [44] and Rosenbloom [45] have also introduced the concept of storylines where the use of language in innovation debates is the focus. Storylines are actively constructed when actors respond to competing storylines. Rogge et al. [46] have developed qualitative and quantitative socio-technical scenarios for future socio-technical pathways and storylines. The storylines give insight into how transitions can be implemented and how policymakers can use transformative policy mixes to govern transition processes. Pel et al. [47] have studied the governance of transition and especially how transition as evolutionary processes with different future pathways can be studied. Their article focuses on directionality-conscious transition governance that should target wide socio-technical and institutional innovations and not just isolated technologies.

2.4. Quantitative Modelling Tools in Transition Studies

Geels et al. [18] note in their research that impacts of innovations have not received great attention in socio-technical research. The problem is that authors in socio-technical research have questioned the possibilities of anticipating ex ante impacts and measuring them ex-post due to the complexity of change [17,18]. Geels et al. [18] see that measuring the potential future impacts present a risk of not capturing all the relevant mechanisms. The impacts of change in a complex system are mediated through multiple interdependencies, time-delayed feedback loops, path dependencies and threshold effects. Additionally, Köhler et al. [17] have highlighted that the problem has been how to set indicators that can take into account the complexity of transition. Geels et al. [18] see that because the anticipating impacts in advance is seen in socio-technical literature as problematic, the researchers have focused more on transition processes than the impacts of transitions and avoided formal modelling and quantification. However, Geels et al. [18] note that there are a few examples where quantitative modelling and qualitative storylines have been used together [19,48,49]. Köhler et al. [17] have also noted in their article a few examples where qualitative and quantitative approaches have been bridged together [50,51].

Even though Geels et al. [18] and Köhler et al. [17] note that anticipating radical systemic innovation is difficult or even impossible, they see the use of quantitative modelling tools and using new techniques and bridging quantitative and qualitative to forecast future impacts is an important research stream in transition studies. Köhler et al. [17] see that there are promises of using modelling tools that can provide an explicit, clear, and coherent system representation. Even though there are identified challenges of using quantitative modelling, they see that transition research that aims to engage with an evidence-based policy environment requires the development of indicators and measurement techniques. Additionally, Fortes et al. [19] note that policy makers tend to favor quantitative elements and thus using modelling and transition studies together can create opportunities to promote transition.

Geels et al. [18] have noted that quantification of impacts can be feasible in incremental innovations with restricted spatial boundaries. They see that in these examples, there can be sufficient historical data on impacts of changes and the system is sufficiently stable for future impact modelling. Estimating potential impacts for radical innovations over a longer period of time presents greater difficulties. They also note that the problem when using modelling tools is that there may not be enough basis for assigning values or ranges to relevant parameters. However, they see that when the limitations (e.g., over-simplification) of using these tools is acknowledged, they can provide useful information of the changes. Understanding impacts of specific innovations or clarifying the long-run relationships
between aggregated measures of productivity, consumption and growth are examples of the impacts that can be modelled [18].

2.5. Health Economic Decision Modelling

Health economics is a branch of economics concerned with issues related to efficiency, effectiveness, values, and behavior in the production and consumption of health and health care services. In the context of health economics, the sustainability of health care systems could be considered as efforts to balance rising cost pressures against limited resources. To answer this type of sustainability challenge, health economic evaluation is used as a tool to inform policy decisions on how to maximize health returns from limited resources under uncertainty [52–56].

The health economic evaluation based on mathematical modelling (i.e., the health economic decision modelling) is nowadays a commonly used approach to support health care decision-making. The health economic decision modelling provides an explicit and logical framework to combine quantitative data from multiple sources and to project the potential health and economic consequences of different comparative policy scenarios. These ex-ante appraisals help to identify policies and technologies that are potentially an efficient use of limited health care resources maximizing the expected health returns from limited available resources. Currently, the ex-ante health economic evaluations are regularly used by, e.g., many European health technology assessment (HTA) agencies aiming to provide national guidance and advice to improve health and social care (see, e.g., https://eunetha.eu/ (accessed on 21 October 2021).

3. Materials and Methods

This paper uses qualitative methods for constructing a vision pathway, and quantitative methods for developing health economic decision modelling for purposes of supporting decision making. The paper attempted to combine the resulting vision pathway with health economic modelling in an online tool that visualizes and calculates possible economic impacts of various future scenarios. Next, qualitative data collection and analyses is presented, followed by a description of the development cycle of the health economic decision model and its online tool.

3.1. Data Collection for Vision Pathway Formulation

A vision pathway is constructed in this study by forming systemic understandings of the potential of digitalization in reducing T2D and the facilitators and barriers towards an envisioned change. To study the system-level changes towards prevention of T2D, it was important to identify and interview a variety of actors that operate inside or close to the health care system. Stakeholders outside the healthcare sector were perceived as important, as prevention of T2D is based on a range of social and environmental factors and interventions that are not directly connected to health care and the transition towards a sustainable health care system needs multi-voices and new stakeholders as change promoters.

First, a stakeholder analysis was conducted to identify the actors most relevant for the purpose of the study. The stakeholder analysis utilized a ‘diamond model’ that categorizes stakeholders into four groups according to their different relations to relation to health services: providers, users, societal actors, and purchasers/refiners [32].

Altogether 23 semi-structured interviews were carried out between May and September 2017 with stakeholders that have an important role in using, developing, or supporting new or existing operating models for the prevention of T2D (Table 1). These included 10 ‘users’ (diabetes-related organizations and associations, unions representing industry and workers, consumers, physicians, and pharmacists); six ‘providers’ (public and private health service and health research providers, ‘best place to work’-companies); four ‘societal actors’ (public entities such as a ministry, welfare and health funding, social insurance
institution, immigration service); and three ‘purchasers/refiners’ (an innovation fund, a public health organization, an organization promoting physical activity).

Table 1. The interviewees’ occupations and expertise areas.

<table>
<thead>
<tr>
<th>Occupations Include</th>
<th>N 23</th>
<th>Expertise Areas Include</th>
<th>N 23</th>
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<tbody>
<tr>
<td>Medical adviser</td>
<td>4</td>
<td>Diabetes</td>
<td>4</td>
</tr>
<tr>
<td>Senior Researcher</td>
<td>2</td>
<td>Social-, health- or labor policy</td>
<td>4</td>
</tr>
<tr>
<td>Business manager</td>
<td>1</td>
<td>Occupational healthcare</td>
<td>3</td>
</tr>
<tr>
<td>Chairman of the board</td>
<td>1</td>
<td>Public health</td>
<td>2</td>
</tr>
<tr>
<td>Chief Director</td>
<td>1</td>
<td>Human Resources</td>
<td>1</td>
</tr>
<tr>
<td>Chief occupational health physician</td>
<td>1</td>
<td>Cardiology</td>
<td>1</td>
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<tr>
<td>Chief physician</td>
<td>1</td>
<td>Funding Preparations</td>
<td>1</td>
</tr>
<tr>
<td>Chief public health nurse</td>
<td>1</td>
<td>Healthy physical activity</td>
<td>1</td>
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<tr>
<td>Executive manager</td>
<td>1</td>
<td>Solution architect</td>
<td>1</td>
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<tr>
<td>Expert Pharmacist</td>
<td>1</td>
<td>Immigrant health</td>
<td>1</td>
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<tr>
<td>Grants officer</td>
<td>1</td>
<td>Nutrition research and obesity</td>
<td>1</td>
</tr>
<tr>
<td>HR manager</td>
<td>1</td>
<td>Political science</td>
<td>1</td>
</tr>
<tr>
<td>Medical director</td>
<td>1</td>
<td>Public administration</td>
<td>1</td>
</tr>
<tr>
<td>Program Director</td>
<td>1</td>
<td>Youth- and physical education policy</td>
<td>1</td>
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<tr>
<td>Project manager</td>
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<td>Research Director (tai: CEO)</td>
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<tr>
<td>Secretary General</td>
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<td>Senior physician</td>
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<tr>
<td>Social policy specialist</td>
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The interviews were guided by insights from the MLP [20,37] that emphasize the importance of understanding systemic aspects and multiple perspectives of change. The interviewees were asked to define the current state of and needed changes in health promotion strategies, to pinpoint actors relevant for the identified change, and to map barriers and facilitators for the change. These questions were then discussed in relation to digitalization and related new technologies; the regional government; health and social services reform; possibilities and importance of cost-effectiveness information; and co-operation between public, private and third sector actors.

The interviews were recorded and transcribed. The transcribed interviews were analyzed and encoded by means of qualitative content analysis in Atlas.ti by classifying and restructuring the data into themes that describe suggestions for changes needed for individual, organizational, municipal, and societal transitions towards comprehensive T2D prevention. In the first stage of analysis, five key transition themes were identified. These relate to municipal decision-making, individual motivation and support, customer-centric and personalized health-care, profitability of health promotion, and implementation of models created in health promotion research projects (described in more detail in a Finnish report from 2018 [57]). Digitalization was at this stage identified as a cross cutting theme, becoming a central element to all of the major themes, and thus taken as the object of study in this paper. In the second phase of the analysis, interview data relating to digitalization, i.e., adoption and use of digital tools in health care organizations and among citizens, was analyzed closely in order to identify potential facilitators, barriers and future visions of digital tools in T2D prevention. For this round of the analysis, Atlas.ti was not used, but several iterative rounds of content analysis were made to derive meanings and remarkable
findings from the data. While going through the selected data, most typical themes were uncovered and classified.

3.2. Data Collection and Analysis of the Health Economic Decision Model and an Online Tool

In the present study, the health economic decision modelling was applied to demonstrate quantitatively the expected economic outcomes of a hypothetical national digitally supported prevention program leading the lower incidence of T2D during the next 10-year time horizon in different target populations. More specifically, the aim was to demonstrate the potential value of recruiting individuals at highest risk of T2D for a digitally supported prevention program. Conservatively, it was assumed that these preventive actions lead to modest (i.e., on average 2.5%) weight (kg) loss during the first year of the program, even if previous studies have showed greater weight losses (3.5–7.0%) during the short-term periods [58–61]. The association between the expected weight loss and the long-term incidence of T2D was estimated based on a post hoc analysis of the Finnish DPS follow-up data [35].

The development of the health economic decision model included the following phases:

- Developing the conceptual model. Modelling process was started by defining the parts of reality in a case of T2D prevention in the Finnish adult population aged 45–75 years, where the incidence of T2D is the most typical. The focus was on the modelling of the incidence of T2D based on its known risk factors; and how the modification of this underlying risk could affect the annual incidence of T2D at the target population level.
- Constructing the model. A simple, commonly applied cohort-based, Markov-type, discrete state transition model with three health states (i.e., no T2D, T2D, and death) were developed to model population transitions between the defined health states in the model.
- Informing the model parameters. Models require evidence to inform their parameters. In this case, the age- and sex-specific proportions of Finnish adult population at moderately or high risk of T2D was derived from the national FINRISK follow-up data [62] by applying the FINDRISC score [35], which predicts 10-year risk to develop T2D based on socio-demographic, behavioral and anthropometric factors. Additional direct (i.e., due to health care use) and productivity (i.e., due to work absenteeism and permanent work disability) costs associated with T2D were obtained from a previous study applying the national social and health care registries [3]. Changes in risk of all-cause mortality due to T2D was obtained from a previously published study [63].
- Exercising the developed model. Formulating scenarios, which were developed for the purposes of the present study focusing on digital tools.
- Online tool. The developed model was published as a web-based online tool with automatic reporting to allow different stakeholders from various organizations to build their own projections and manipulate model assumptions related to, e.g., a level of baseline risk in a target population or an applied perspective of analysis (i.e., a health care payer vs. societal perspective), as well as change parameter values (e.g., a size of target population, a cost of prevention program, etc.) as needed. The pdf report that the users receive from using the tool included the calculations of potential savings and the vision pathway with identified themes from the interviews. The transition-focused storylines of each of the themes gives users information of the barriers and facilitators of the needed changes in the health care system.

4. Results

4.1. Contextualizing the Digital Transition for T2D Prevention

In Figure 1, the MLP model of this study is presented, which focuses on the change towards a health promoting society with a specific focus on prevention of T2D in Finland. The figure is based on the current structure of Finnish health care and it is formed based on the information from the interviews. By using the MLP, we aim to visualize the multiple technologies, regulations and practices needed for the change. It is not a comprehensive
picture of all the issues related to the prevention of T2D, but it aims to picture the on-going changes. It also offers a contextual basis for the creation of the vision pathway.

At the landscape level, an aging population and decreasing resources create challenges for the sustainability of the current system. The platform economy challenges the current system and its societal values, pressuring a shift towards personalized and citizen-centric services where values are created together with citizens. The current social and health care regime is trying to respond to changes in the landscape by modifying the legislation (e.g., healthcare, social welfare and regional government reform) and fostering innovations through policy actions (e.g., H2020 funding). For example, the ODA program (self-care and digital value services) is a Finnish government project focusing on developing a new digitalized service for citizens which brings together information from different sources. The SADe program (Action Programme on eServices and eDemocracy) provides interoperable public sector services via digital channels [64]. With a focus on T2D, the FIN-D2D program tested the Programme for the Prevention of T2D in Finland in practice and developed new action models to be taken into use nationwide [65]. In the niches, innovations are created that have a possibility to change the system. New digital platforms, mobile app-based services and IOT-based services are in the core of innovations. As an example, Kanta services offer a nationwide platform where citizens can see their personal health records. Research results (e.g., DPS study) are proving that T2D can be reduced by lifestyle interventions [66] and digitalization can offer tools to better manage health and wellbeing.

The socio-technical changes required for successful adoption of digitalization are contextualized within the theoretical lenses of multi-level perspective and the existing structure and operations of the Finnish health care system, including the actual barriers and facilitator of the five themes that guide the change towards transition of prevention of T2D. This vision pathway was named “change towards prevention of type 2 diabetes in Finland by 2030” (Figure 2). Embedding and scaling up health promotion interventions is situated between the niches and the regime. The challenge is that the innovations stay local and do not change the health care system in a comprehensive way. Creating health promotion innovations also demands new finance structures. Citizens centric and personalized health care requires development of innovations and changes in the regime. Setting health promotion as a priority is something that policy makers and politicians can make, and it is thus situated in the current regime. Supporting healthy lifestyle is a system level aim that crosses different sectors and is not situated only in the health sector. The

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**Figure 1.** Multi-level perspective of the change towards prevention of type 2 diabetes in Finland by 2030 (modified from Geels [20]).
vision pathway was named as change towards prevention of type 2 diabetes in Finland by 2030 (Figure 2).

![Diagram of the vision pathway towards prevention of type two diabetes in Finland by 2030.]

The vision pathway included transition-focused storylines of the barriers and facilitators of change, which were formed from the analyses of the interviews. In the next section, we present the storyline of digitalization. The analyses of the interviews point out the issues that facilitate or act as barriers of change.

4.2. The Opportunities and Barriers of Digital Tools for a Transition towards T2D Prevention—Analysis of the Interviews

4.2.1. Health Care Organizations Are Yet to Utilize the Full Potential of Digitalization

Health care organizations are yet to utilize the full potential of digitalization. One of the reasons seem to be the lack of structural and organizational changes needed in order to sufficiently benefit from digital technology. A senior physician described the current situation as follows: “Well, we are not digital yet. At the moment, digitalization means that things are transferred from paper to pdf. Or old working practices are transferred to be done with a computer. We need to become aware that the change needs to happen in organizations and systems’ structures”.

In reality, health care professionals do not often perceive everyday practices and services from the novel perspectives offered by digitalization. When old practices are simply transferred to the digital world into current organization of services, it does not create new structures where innovations’ potential would be sufficiently harnessed. Efficient use of digital tools would require management to ensure organizational capabilities in meaningfully adopting new practices, technologies, services, and changes in ways of working. A business manager considered the problem of uptake as follows: “many things are related to the misunderstanding that things are fixed after buying a digital solution. It does not work like that. In many instances, it would require changes in operational practices. These new practices have proven to be very difficult to introduce in organizations. It could be a matter of organisational capabilities” (Business manager).

4.2.2. Digital Tools Can Empower Citizens in Individual Health Promotion

Interviewees pointed out that change towards wider adoption of digital health promoting practices has not happened yet in a large scale, but a transition is possible. The interview viewpoints were in a sense anticipatory; a perspective exemplified by a medical adviser (A): “The change is happening, but I do not think a transformation has happened yet. I think that in ten years the number of citizens that can take care of themselves through applications or digital systems will increase. It will increase significantly”. While the nature of change remains
tentative, interviewees held that digital tools contain potential to empower citizens to foster health promotion. A quote from a project manager working with diabetes related projects crystallizes the idea of patient empowerment through a digital leap in health care: “the current practice is that a patient comes to the doctor’s appointment, gets instructions and guidance and acts according to them. Digitalization enables patients to also have an opinion about their care”. This is also due to the fact that citizens have become increasingly interested in their own health. They use different methods to collect their health information or gain access to information produced by healthcare professionals. Based on new information created through digital applications, citizens can also have a more accurate understanding of their current health and become active partners in their care. Thus, using this information can give citizens new knowledge of preventative methods and an ability to detect preventable health issues.

4.2.3. Individually Collected Health Data Integration with Health Care Practices Would Benefit Patients

Citizen demands are one of the key drivers in spurring change towards citizen centered health care model. The interviewed actors noted that citizens sometimes share self-collected health information with health care professionals, and that the professionals value this information. A senior physician pointed out that “patients bring their own excel documents and other data to doctor’s appointments. It would be a dream if we could get this information to our systems automatically”. However, there is no easy way to complement patients’ data with the health care system data. The physician continues: “the problem nowadays is that patients have so many different forms of collecting data”. Thus, data compatibility and interoperability issues remain an obstacle for smooth integration between health care and personal data. Encouraging a faster pace of change would, according to a business manager, require that citizens start demanding data integration to initiate otherwise slow change among health care providers: “this problem could start to unravel if the citizens become active and demand more from private and public health care provider (. . . ) If you analyze how the health care professionals have facilitated the change, you have to say it has been very slow”.

4.2.4. Hard to Motivate Investment in Health Promotion as No Immediate Effects Can Be Observed

Our interviewees pointed out the problem of sufficiently proving the impacts of disease prevention innovations. The impacts of prevention projects are difficult to verify because the impacts are observable only some years or even decades after initiation of the intervention. A research director held that: “If you think about prevention or health promotion, the effects and impacts of certain action will be visible in years or even decades. And the cost-effectiveness can be even negative for the first years”. This problem becomes visible in designing and planning new projects, where the funder needs some estimation of how the innovation will provide savings or produce quality in citizens’ life. Without this information, policy makers have a hard time in justifying spending on new technologies. A medical adviser (B) described the issue as follows: “Studies to show the cost-effectiveness are necessary because that is the thinking that politicians understand. We need to show that spending money will produce impacts, whether they are cost savings or health benefits or both”.

4.2.5. Citizen-Centered Design Is a Potential Solution for Digital Capability Problems

A commonly voiced notion and worry was that mainly younger generations have the ability to use digital tools, and senior citizens do not have knowledge or the necessary equipment to use many of the applications available. A social policy specialist illuminated the problem as follows: “There is research from Finland that half of senior citizens over 65 do not use digital tools. That is about 500,000 people, which is a lot”. The specialist maintained that the problem will persist regardless of technical development: “I do not also think that this is a problem which will go away when citizens get more used to digital tools. Digital tools are being upgraded all the time and there will always be customers who are falling behind”. The different capabilities for using digital tools could mount up to a structural problem of
some populations not being able to use these tools. According to a medical adviser (A) this is a present risk: “a major risk is the growing inequalities between different population groups, especially how connected they are to digital tools. During the next 10 years, this issue requires attention. We have to make sure that everyone will stay on board”. Thus, it becomes essential to design alternative ways of maintaining good quality services: “we also have to think what to offer to citizens who are not using digital services (…) with senior citizens there are vision, dexterity, and memory problems and so on. We have to have other options for these citizens”. (Social policy specialist). However, these views were contested by a more optimistic business manager: “Before the assumption was that all citizens are not able to use digital services, but now the trend and time is on our side”. The manager held that digital capabilities themselves are not the problem. Instead, the question is one of design: “Senior citizens know how to use internet bank services or Facebook, so the assumption is that they become more able to use also digital health services. There is no problem if the services are designed to be user friendly” (Business manager). Thus, the important thing is to design these tools according to citizens’ needs and capabilities.

4.2.6. Gamification and Displaying Impacts Can Support Longer-Term Health Application Use

Some interviewees noted that the fast pace of digital development and the large quantity of available digital applications provide possibilities within the healthcare sector. A project manager told that: “if you go to the App Store and type health or diabetes, you will get thousands of applications”. However, there are problems with unconnected data and incompatible formats between programs and applications. A medical adviser (C) pointed out the problems through an example of nutrition apps, where: “you have to fill in the information on the application. It should be more automatic. The more manual work there is, the more easily people will get bored”.

Another problem is that citizens use applications for a relatively short time. Commenting on the problem of attracting citizens’ attention for a longer time in digital tool use, a chief occupational health physician pointed out that: “gamification is one solution. And it is just not for young people, but also for senior citizens”. Gamification describes using elements of game playing to increase motivation and engagement with digital applications. Another way of maintaining motivation for healthy lifestyle routines is to visualize the benefits of lifestyle changes. A research director commented that: “Citizens want to see the results of their actions relatively swiftly. Lifestyle changes reduce the risk of getting type 2 diabetes but if the citizen can see the effect years from now, it is not likely to motivate them. Applications can help to visualize results and affects their everyday life”. The idea is that people in general do not promote a healthy lifestyle in order not to get T2D in 10 years, but have more immediate reasons for motivating action. Combining applicable technical interoperability standards, gamification, and visualization of immediate health benefits, could support longer-term health application use and thus a healthy lifestyle.

4.2.7. Identified Facilitators and Barriers towards the Change in MLP Model

The interviews pointed out facilitators and barriers towards the use of digital tools to prevent T2D in Finland. These observations are situated in the MLP model to show the needed actions in different levels (Figure 3). The identified facilitators are colored in green and the barriers in red.

Digital tools that has been tested in the current system has shown that they have the possibility to empower citizens and give them tools to promote their health (e.g., 53 and 54). However, the regime is not utilizing the full potential of the digitalization and the systems is trying to cope with the old rules and ways of working and interacting. There are many possibilities in the niches that are identified by the interviewees. As the citizens are collecting more and more data about their health, the interaction to health system would have a great advantage to the citizens and their possibilities to prevent diseases. Citizen-centricity and new ways of delivering services can be seen as a potential solution for digital capability problems. The new tools are not just for younger citizens, but they can also motivate senior
citizens as also pointed out in the study by Harjumaa et al. [31]. Gamification also has possibilities to promote a longer usage of digital tools and different applications can help to visualize changes. However, as the socio-technical change literature suggests, developing these new innovations in the niches requires protection from the market selection (e.g., creating opportunities to test new innovations and providing funding). If the innovation that focuses on preventing diseases cannot prove its impacts, it is difficult to convince the policy makers and other funders to give resources to innovation development.

Figure 3. Facilitators (green boxes) and barriers (red boxes) for using digital tools in the prevention of T2D in Finland situated in MLP model.

4.3. The Use of a Digitally Supported Prevention Program in Different Target Populations—Health Economic Outcomes

The future is unknown for all us, but using foresight methods, such us scenarios, we can create understanding of the potential futures, and also the potential impacts. This study refers to the impacts of using digital tools to prevent T2D, which were estimated through scenarios. Three different scenarios were made to demonstrate the potential value of recruiting individuals at highest risk of T2D for a digitally supported prevention program (Table 2). The scenarios were (1) targeting a digitally supported prevention program to all Finnish adults at 45–75 years of age (2) targeting a digitally supported prevention program to all 45–75-year-old adults at moderately elevated risk of T2D (FINDRISC Score > 12) and (3) targeting a digitally supported prevention program to all 45–75-year-old adults at high elevated risk of T2D (FINDRISC Score > 15).

Table 2. Studied scenarios aiming to demonstrate the expected economic outcomes of a digitally supported prevention program in different risk-based target subpopulations.

<table>
<thead>
<tr>
<th>Scenarios</th>
<th>Description of Scenario</th>
</tr>
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<tbody>
<tr>
<td>Scenario 1</td>
<td>A digitally supported prevention program targeted to all Finnish adults at 45–75 years of age</td>
</tr>
<tr>
<td>Scenario 2</td>
<td>A digitally supported prevention program targeted to all 45–75-year-old adults at the moderately elevated risk of T2D (FINDRISC Score &gt; 12)</td>
</tr>
<tr>
<td>Scenario 3</td>
<td>A digitally supported prevention program targeted to all 45–75-year-old adults at the high elevated risk of T2D (FINDRISC Score &gt; 15)</td>
</tr>
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Figure 4 presents the results of the modelled example scenarios. As shown in Figure 3, targeting a digitally supported prevention program to adults at highest risk could be expected to provide the relatively highest total savings at the population level during
The next 10 years. At the individual level, the expected savings per person were −261€, −900€, and −1535€ among all adults at 45–75 years of age, adults at 45–75 years of age with moderate T2D risk, and adults at 45–75 years of age with high T2D risk, respectively. The results of these scenario projections indicate that it is worthwhile to offer the digitally supported T2D prevention program to all Finnish adults at 45–75 years of age. However, if the health care system can afford to provide the prevention program only a fraction of adults at 45–75 years of age, the highest expected savings could be obtained by prioritizing prevention program based on T2D risk.

![Figure 4](image_url). Results of the example scenario analyses demonstrating the expected 10-year savings potential (millions) of national digitally supported prevention program in the selected target populations.

### 4.4. Online Tool Combining Transition-Focused Storylines and Forward-Looking Scenario Analyses

As mentioned above, the web-based online tool ([https://esior.io/stopdialaskuri1/](https://esior.io/stopdialaskuri1/)) was developed to enable user-defined scenario analyses for savings potential in different target populations while considering different values, e.g., for a cost of prevention program, size of target population, etc. (Figure 5). In addition, the online tool combined these user-defined scenarios with the transition-focused storylines to provide the vision pathway for change in the prevention of T2D in Finland. The online tool was targeted to policy makers in the municipalities to help in estimating the potential savings of using preventative tools to reduce T2D. Therefore, it was considered important to integrate the vision pathway to the online tool as it gives policy makers an overall picture of the needed changes in the system.

The transition-focused storylines presented barriers and facilitators towards the use of prevention of T2D in Finland. The barriers and facilitators were categorized under the identified themes of setting health promotion as a priority, embedding and scaling up health promotion interventions, new financing models to support health promotion, healthy lifestyle through support and citizen centric and personalized care. The transition-focused storylines with barriers and facilitators are not presented in detail in this paper as the focus is on the digitalization and the possibilities it has to transform the current health care system.
Figure 5. Print-screens of the developed online tool (https://esior.io/stopdialaskuri1/ (accessed on 21 October 2021)) combining the transition-focused storylines and forward-looking scenario analyses. Automated reporting enables users to generate downloadable reports (including user-defined scenarios supported by transition-focused storylines) for further use. The online tool is currently available only in Finnish.

Thus far, the feedback received from local decision makers on the online tool has been supportive. However, the feedback called for even more simplified user interface, which is something that could be developed in the future. From the point of view of policy impacts, the online tool has raised interest not only among the local decision makers, but also in the Finnish Prime Minister’s Office. The joint analysis, assessment, and research activities (VN TEAS), which works under the leadership of the Prime Minister’s Office, initiates funding that supports decision making procedures, working practices and management by knowledge. One of their recent funding calls was based on the online tool presented in this paper, which they have identified as unique policy-relevant tool and thus, the objective of the call was to find out if there are similar tools published in other countries and if these recognized tools could be applied in the Finnish context to support local planning and decision making. This could be considered as a clear indication that there is a need to develop and use these kinds of interactive tools to help steer policy making towards more sustainable health systems. Based on our knowledge, there are only few other health economic tools in the field of T2D prevention, such as NHS Diabetes Prevention Programme Return on Investment Tool (https://dpp-roi-tool.shef.ac.uk/ (accessed on 21 October 2021)) and Centers for Disease Control and Prevention’s Diabetes Prevention Impact Toolkit (https://nccd.cdc.gov/Toolkit/DiabetesImpact (accessed on 21 October 2021)).

5. Discussion

There is a need to change the health care system in Finland towards preventing diseases in order to ensure the sustainability of the system and improve healthcare. Chronic diseases, such as type 2 diabetes (T2D), create challenges to sustainability that can be better tackled by more preventative actions [4,5]. Currently, however, T2D interventions mostly focus on a single innovation or a tool and test the impact on, e.g., weight loss [58–61].
In addition, using preventive methods have proven to be difficult and there are barriers towards the change even though digitalization has created new promises. This study has grasped these problems and created a vision pathway towards prevention of T2D in Finland and developed transition-focused storylines and forward-looking scenarios to demonstrate the needed changes and the expected national savings potential of T2D prevention in Finland. The study has also created an online tool to promote changes and give policy makers a tool to estimate expected economic impacts of preventing T2D, as well as ideas of the needed systemic changes.

This study proposes that transition towards sustainable health system require a large-scale socio-technical change. This change can be studied from the perspective of transition studies and more precisely from the approach of multi-level perspective (MLP) [16,20]. In this study, the MLP model’s landscape level concerns the aging population, decreasing resources and shifting societal values towards personalized and citizen-centric services, which has created pressure for system change. The social and health care regime is trying to respond to these changing values via different legislation renewals and policy actions. There are also a number of niche innovations that drive the use of more preventative methods. It appears that digitalization has the possibility to renew the fundamental architecture of the Finnish social and health care system.

Transition pathways [16,39] have been used in transition literature to explain the overall course of development of innovation and giving frame for the analysis of occurred transitions. The research is mostly focused on analyzing past transition, but there are also studies that has focused on future transition pathways [46]. This research contributes to this discussion by developing a vision pathway towards the transition in Finnish health care system towards prevention of T2D. The study focused on identifying large themes towards a health promoting society in Finland. These themes were identified from the 23 interviews of actors and were situated in the MLP model to give insight into the changes required in different levels. These themes were named as setting health promotion as a priority (regime level), embedding and scaling up health promotion interventions (regime and niche level), new financing models to support health promotion (niches), healthy lifestyle through support (regime) and citizen centric and personalized care (regime). Although, the interviews were carried out 2017, the system level change as well as enablers and barriers of the change are not growing old quickly.

A cross-cutting theme of digitalization was also identified from the interviews. Digitalization was selected as a focus theme in this study because it was identified as a cross-cutting theme and of the need to handle complexity and lack of data required for the development of a very complex health economic decision model to support impact assessment of alternative policies. Transition-focused storylines opened up the facilitators and barriers towards the change, which were based on results from the interviews. The results confirm the previous findings [14,15,23,24] that digitalization can promote transition in health care.

Results show that digitalization is framed positively as providing a range of solutions for improving health promotion, even though digital technologies are yet to transform health care. Stakeholders see opportunities for more agile, citizen-centered, customized, and empowered care. Digital technologies can make health promotion better through empowering tailored and customized individual health promotion; by integrating health care system data with individually collected data; and by using gamification and visualizing impact of health promotion practices. Moving towards an increased focus on prevention is a means to achieve a more sustainable health care system. However, the results show that attempts to increase focus on preventative health care is still hindered by the current information input and financial incentivization structure within health care: the effects of many health promotion activities are hard to measure and thus investing in means to promote them hard to legitimize. It is essential to provide opportunities for niches to develop new innovation, but showing the impacts of innovations focusing on prevention needs new tools and value assessment approaches [67]. It is also important to acknowl-
edge citizens’ different capabilities to utilize digitalization. Nonetheless, new tools are not just for younger citizens, but they can also motivate senior citizens as pointed out by Harjumaa et al. [31].

The research results indicate that currently the change in Finland towards prevention of T2D is in the transformation pathway (e.g., Geels [40]). The results also confirm previous findings (e.g., [25]) that developing new digital services has faced a number of challenges and the new system has not yet emerged. According to the results of the study, it can be assumed that a system level transition is an ongoing process and the change has not yet happened. Nonetheless, the window of opportunity is about to open through the introduction of digitalization. Geels and Schot [39] note that the transition pathway can shift to another pathway. Our analyses indicate that the current transformation pathway is shifting towards a reconfiguration pathway where multiple niche innovations solve the problems in the regime. This leap from a transformation pathway is in many ways challenging and represents fundamental change in the system, which may lead to a transition to a completely new system.

In addition to the vision pathway and transition focused storylines, a health economic decision model gave information on what are the possible impacts of using digital tools to prevent T2D. The scenarios indicate that it is worthwhile to offer digitally supported T2D prevention programs to all Finnish adults at 45–75 years of age. However, the highest expected savings could be obtained by prioritizing prevention programs based on T2D risk. This confirms the findings from the previous literature (e.g., [68]). The online tool was developed to offer municipal policy makers tools to estimate expected economic impacts of preventing T2D, as well as ideas of the needed systemic changes. By using the online tool, user receives a report that presents the vision pathway and transition-focused storylines together with health economic decision modelling results.

The presented study has grasped some of the problems identified in the transition literature. First, it has followed the same ideas that Foxon [42] have used in his study by describing possible futures. However, Foxon [42] highlights in his article the need to estimate the expected cost of different pathway options. There are also identified needs to evaluate the impacts of using digital tools [23]. The study has answered this need by creating scenarios. In addition, Papachristos et al. [43] have noted in their article that it would be beneficial to study the change from the point of view of actors outside the system. For this, the study has also interviewed outside actors of health care to cover these different views since the since prevention of T2D is based on a range of social and environmental factors and interventions that are not directly connected to health care.

Second, as Geels et al. [18] have noted, it is not easy to bridge transition studies together with quantitative modelling due to the systemic nature of innovations. However, they have noted that there are circumstances where the use of quantitative tools is possible. There should be sufficient historical data on impacts of changes and the system is sufficiently stable for future impact modelling. The examples of using qualitative and quantitative methods are mostly focused on the energy and environmental sustainability issues, and the sustainability of health care systems have not been studied from this perspective. In the presented study, the use of quantitative modelling and vision pathways has followed the notions from previous studies. Instead of modelling the entire transition towards prevention of T2D, the study focused on a single theme of digitalization. There are accurate medical data of the impacts of using preventative methods to citizens health, which are used in the study to estimate the future impacts. In addition, the health care sector can be seen to be sufficiently stable to estimate the impacts.

The third issue pointed out by the transition studies is the identified need for focus on system innovation in-the-making and development of forward-looking analysis, policy-relevant scenarios, and toolboxes due to the demands to initiate and catalyze transitions and not just describing them [48]. In addition, Foxon [42] has called for more research to estimate the expected cost of different pathway options. What is new in this study from the point of view of transition studies is the developed online tool with interactive quantitative
modelling and qualitative vision pathway together with transition-focused storylines. In this respect, the study has followed the ideas presented by Rogge et al. [46]. The online tool is an addition to the study of Rogge et al. [46] as it gives the users information about the possible impacts and in addition to the storylines of needed changes.

What was also learned from this study is that while interdisciplinary research is considered something to aim at, it takes time to get the common, novel and unique understanding of the goals, results and conclusions that have been realized. The value addition of the disciplines, approach and method triangulation brought the researchers to the essence of research in the method of trial and error. In this study, it has been essential to understand system-level changes, but a triangulation of methods and approaches was challenging due to the differences between the methodological starting points of transition studies and quantitative modelling. Health-economic modelling needed quite explicit definitions of evaluation objectives to make scenarios, while the identified systemic changes were mostly descriptive without actual data of the impacts.

What can be learned from this study is that even though quantitative tools alone have a hard time capturing the systemic nature of innovation and change, they can be used in a focused setting to evaluate the impacts of different future possibilities. This study agrees with Geels [18] that there should be sufficient historical data on the impacts of change and have clear spatial boundaries. Without this information modelling, the change is somewhat impossible. However, obtaining this kind of information about systemic change is problematic, and when focusing on smaller changes or themes, there is a danger of missing the essence of systemic change. Nonetheless, this study proves that while acknowledging these restrictions, using transition studies together with quantitative modelling has possibilities to promote transition in-the-making called for from the previous studies by Fortes et al. [19] and Köhler et al. [17].

6. Conclusions

This paper has aimed to demonstrate that even though modelling the impacts of the transition is difficult due to the complexity of change, it is possible to project possible impacts of different changes and thus help decision makers direct their choices. This study brings new insight to the field of health care, where the problems of sustainable systems are situated in an environment where innovations often are intangible and the impacts are problematic to verify. Thus, the research provides new ideas to the transition literature on how to tackle societal needs to promote transitions in different systems. Transition studies have looked for ways to promote changes in the society and develop policy-relevant scenarios and toolboxes [17]. This study has presented one way to foster the change through using vision pathways and health-economic modelling. These results can guide the research towards developing solutions to existing problems. However, future research could focus on developing methods and tools where the pathways and modelling results are better integrated to each other.

It should be noted that this research does not capture all the elements and mechanisms of change in a complex health care system. It has focused on preventing T2D and a single theme of digitalization and presented the findings from that perspective. Transition towards prevention of T2D requires socio-technical change where changes need to happen in different levels of the society. The presented vision pathway has tried to picture these multiple changes required for transition.

However, the results are not specific to T2D prevention alone, but can be interpreted to concern health promotion activities in general, and an increasing transformation in the health care system towards emphasizing preventative measures alongside acute care. In addition, the web-based online tool does not focus just on digitalization and aims to capture the impacts of the use of preventative action as a whole. It also broadens the perspective by providing knowledge of needed systemic changes in the socio-technical system.
Author Contributions: J.L. was the main author of the article. She was responsible for the theoretical analysis of transition studies. She also carried out the empirical analysis with the help of A.S., who also helped with the description of the research methods. J.M. was responsible for the health economic decision modelling and the results of the scenarios. The online tool was done in collaboration with J.L. and J.M. Results were carried out in the collaboration of J.L., J.K. and J.M., J.K. and J.M. participated formulating the discussion and conclusion, but J.L. had the main responsibility for these sections. J.P. edited the article and acted as a supervisor for the article. All authors have read and agreed to the published version of the manuscript.

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Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data that support the findings of this study are available from the Finnish Institute for Health and Welfare and the StopDia project, but restrictions apply to the availability of these data, which were used under license for the current study, and so are not publicly available. Data are, however, available from the authors upon reasonable request and with permission of the Finnish Institute for Health and Welfare and the StopDia project.

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Conflicts of Interest: Janne Martikainen is a founding partner of ESiOR Oy, which provides data-driven health economic and outcome research services its customers. In the present study, ESiOR Oy provided technical support in the development of the online tool. Other authors declare no conflict of interest.

References


15. Tata, N.; Arsand, E.; Skrewseth, S.O.; Hartvigsen, G.; Mattila, E.; De Alarcon-Sanchez, P. Long-term engagement with a mobile self-management system for people with type 2 diabetes. JMR natHealth uHealth 2013, 1, e1. [CrossRef]


57. Sigfrids, A.; Leväsluoto, J.; Kohl, J. Hyvinvoinnin Edistäminen nyt!: StopDia-Hankkeen Toimijahaastatteluiden Antia; VTT Technical Research Centre of Finland; VTT Technology: Espoo, Finland, 2018.