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How Innovation Systems Promote and Hinder Innovations in Healthcare - a Swedish Case

Nomie Eriksson[1], Hanife Rexhepi[2], Reza Javid[3], Erik M. Djäken[4], and Svante Lifvergren[5]

[1]School of Business, University of Skövde, Skövde, Sweden | *nomie.eriksson@his.se*
[2]School of Informatics, University of Skövde, Skövde, Sweden | *Hanife.Rexhepi@his.se*
[3]Västra Götaland's Region, Skaraborg's Hospital, Research and Development Department, Sweden | *reza.javid@vgregion.se*
[4]Innovation Platform, Region Västra Götaland, Sweden | *erik.martensson.djaken@vgregion.se*
[5]Center for Healthcare improvement, Chalmers University of Technology, Sweden | *svante.lifvergren@gmail.com*

Abstract

Healthcare organizations must remain up-to-date when healthcare systems are in constant flux. One way to meet challenges is through innovations. The aim of this study is to explore what promotes and hinders the implementation of innovation in healthcare's complex organizational environment. An innovation system was studied through qualitative interviews with nine respondents. The results show that the implementation and adoption of innovations in healthcare are complex. The complexity of the innovation determines the likelihood and speed of the adoption among healthcare professionals. Promoters such as human and financial capital were seen as critical for the sustainability of the innovation. Evaluating the innovation through scientific processes was also important to gain legitimacy and is seen as an important contribution to research. The identifying promoters and hindrances are practical implications to prompt reflection on healthcare innovations among managers and healthcare professionals.

Keywords: Innovation System; Healthcare Innovation; Challenges in Innovation; Sweden; Case Study.

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1 Introduction

A major challenge facing healthcare organizations is remaining up-to-date in an environment in which medical information, technologies, and relationships with other healthcare systems are in constant flux (Ross et al., 2016). At the same time, the aging population and the steady increase in the number of people living with chronic disease have put pressure on healthcare systems (Richer et al., 2009). As healthcare organizations face unprecedented challenges in meeting the increased need for care of various stakeholders, improving quality of care, increasing efficiency, eliminating waste, and lowering costs, innovation was identified early on as a critical capability for healthcare organizations (Länsisalmi et al., 2006). Although innovation is considered a critical capability of knowledge (Savory and Fortune, 2015), knowledge about innovation in healthcare is surprisingly scarce (Øvretveit et al., 2012). Healthcare innovations aim to improve measurable indicators of healthcare, including quality, health disparities, effectiveness, patient-centeredness, safety, and timeliness (Agency for Healthcare Research and Quality, 2013). Innovation can be

defined as "a novel idea or set of behaviors, routines, and/or ways of working that involve a change in practice within a healthcare setting" (Moullin et al., 2015). Thus, innovation denotes new and more effective ways of solving problems (Kimble and Massoud, 2017). The innovation processes are generally complex and non-linear and require broader and more subtle system transformations (Lehoux et al., 2009). Innovation in healthcare organizations is particularly difficult, for several reasons: complexity of the environment, the patients cared for, and services provided; a workforce that encompasses different professions; and existing organizational cultures (Stolldorf et al., 2020; Parthasarathy et al., 2021; Kimble and Massoud, 2017; Linnéusson et al., 2022). According to Keller (2013) and Mannion and Davis (2018), organizational culture has not only been identified as an important condition for healthcare innovations, but also as one of the main blocking mechanisms for innovations (see also Plsek, 2014).

Considering the above-mentioned challenges facing healthcare organizations, there is a need to better understand what the challenges of innovation implementation processes are. For example, why do some innovation projects fail despite having great ideas and potential? Hence, this paper aims to explore what promotes and hinders the implementation of innovation in healthcare's complex organizational environment, by studying a region-wide case study in Sweden named "Mobile Healthcare Team" (MHT). MHT is an innovation of a healthcare model developed in West Sweden that makes it possible for patients with multiple diagnoses and complex nursing needs to receive care in their own home instead of a primary care center and/or hospital. To create a deeper understanding of what promotes and hinders innovations the framework of Larisch (2016) has been applied in the study. This framework was also used as it has been empirically tested. Moreover, by identifying promotes and hinders this paper, not only contributes to the healthcare organizations by promoting a reflection on healthcare innovations among managers and healthcare professionals, but also provides concrete characteristics of what affects the success of an innovation implementation.

The remainder of this paper is structured as follows. The background section provides an overall description of the MHT and the model of functional dynamics of innovation systems by Larisch et al. (2016). Thereafter, the methods used in this study are described. The paper concludes with a description of the result, discussion, and main conclusions.

2 Background

This chapter provides a description of the MHT innovation, followed by a section about healthcare innovation.

2.1 The Mobile Healthcare Team (MHT) – an integrated care

In the 2000s, a growing set of reports illuminated how an increasing elderly population was already a phenomenon in several European countries, including Sweden. As people get older, increasing numbers of patients suffer from multiple diagnoses that require extensive specialist care and more resources (Stiernstedt, 2016). Subsequently, the number of elderly people with complex care needs will increase. MHT started in the beginning of the 2000s as a collaboration between one hospital in the northern part of Western Sweden, six municipalities, and the primary healthcare centers in those municipalities. One of MHT's goals was to reduce the number of inpatient care episodes and give patients with multiple diagnosis good quality care in their home. The number of inpatient care episodes, both nominal and relative to the population, was considered to be unsustainable with an aging population. MHT was seen as an opportunity to preclude increasing

admissions to the specialized inpatient hospital care. An MHT to visit patients in their home was suggested as a solution to patients with multiple diagnoses who need significant hospital care.

The studied innovation was chosen because it is a nationally recognized innovation with the aim of improving healthcare quality. Moreover, the innovation has now been widely implemented in Western Sweden and has received several prestigious awards. However, the innovation has been successful over the years, but has also experienced various setbacks (Lifvergren et al., 2012). Based on internal and external reviews, the innovation initially contributed to a positive effect on the organization of care among patients. However, the positive effect of the innovation has been difficult to maintain due to various difficulties, which makes it interesting and important to study.

2.2 Healthcare innovations and model of functional dynamics of innovation systems

Healthcare innovations can be defined as implementing new or significantly improved products/goods or services, processes, marketing methods or business models, policies, or organizational structures (Moullin et al., 2015). This definition is in line with Kimble and Massoud (2017) and Länsisalmi et al. (2006), who defined healthcare innovations as typically new services, new ways of working and/or new technologies that benefit (1) patients through better health or less suffering due to illness and/or (2) the organization through enhanced efficiency of internal operations. Healthcare innovation is often seen as a complex social process (Essen & Lindblad, 2013) that requires a dynamic interaction of several contextual factors in a given environment (Gomes Chaves et al., 2021). Thus, individuals, the organization, and cultural, economic, and political elements can positively or negatively influence the emergence, implementation, and dissemination of innovations (Gomes Chaves et al., 2021). Several conceptual models have proposed ways to analyze factors that facilitate or inhibit innovations such as the model of creativity and innovation in organizations by Amabile and Pratt, (2016) and Larisch et al. (2009) framework for the functional dynamics approach. The functional dynamics approach suggests analyzing the composition, interaction, and activities of innovation systems components and their contributions to seven key system functions (Hekkert and Negro, 2009; Bergek et al., 2008).

Functional dynamics by Larisch et al. (2016) refers to the structural characteristics and dynamics of an innovation system and the dynamics of a number of functions/processes that directly influence the development of a new way of working. Below are the seven functions presented. These functions have been revised, adapted for different levels of analysis, and empirically tested (Larisch et al., 2016; Bleda and del Río, 2013; Radosevic and Yoruk, 2013; Hekkert and Negro, 2009). Moreover, these functions cover the key processes in the dynamics of an innovation system. According to Larisch et al. (2016), the seven functions are not mutually exclusive or independent of each other and do not always play an equally important role. Innovations are discussed as dynamic functions of an innovation system (Bergek et al., 2015; Larich et al., 2016). However, all functions influence each other in some way and therefore potentially play slightly different roles in the emergence and development of an innovation system. The number of functions is somewhat arbitrary. The application of the system function approach has resulted in a number of lists in the research literature. In this paper, the latest list of system functions, as described by Larisch et al. (2016), is used. The results of the empirical data have been analyzed according to these functions as the functions provide a framework for understanding an innovation process in healthcare. The framework has also been empirically tested, which makes it appropriate to use in a case study. By creating an understanding of an innovation process, it is possible to explore what promotes and hinders an innovation.

Table 1. Functions for innovation (inspired by Larisch et al., 2016)

F:1	*Knowledge* is a prerequisite within the innovation system. That emphasizes the need to develop and diffuse knowledge from different sources. This function encompasses "learning by searching" and "learning by doing".
F:2	*Legitimation* is a matter of social acceptance and compliance with relevant institutions. To gain acceptance and support for an innovation, leadership must create acceptance and support for innovation activities in the system through clearly expressed visions and expectations for innovation in the healthcare sector.
F:3	*Resource mobilization* is dependent on the extent to which human capital, financial capital, and complementary assets are mobilized and the character of this mobilization, for the creation and diffusion of innovation need to be available.
F:4	*Guidance of search* shows systems opportunities to maintain and/or increase their quality when problems arise. It depends on the capacity of the systems to identify and direct activities to critical needs and problems.
F:5	Innovation systems *entrepreneurs* are of prime importance. Through a permissive climate where entrepreneurship in its full form can take place, new knowledge can be developed and transformed into innovation.
F:6	*Market formation;* as stated, innovations are made widely available on markets where supply and demand meet. Market formation in healthcare is more restricted by regulations than it is in other markets.
F:7	*Creating system-wide synergies* with other systems. If functions are fulfilled, a mutually reinforcing and synergistic system can function and spread widely positive effects. Standards enable the reuse and interoperability of innovations.

3 Methodology

Healthcare in Sweden is divided into different regions. The Western Region has an overall responsibility for healthcare and operates in 17 hospitals, 121 healthcare centers, and 170 public dental care centers. The case study was conducted at a medium-sized hospital in Sweden and was part of a research project that aimed to analyze the innovation system of a hospital. The case study was selected due to its mixed successful improvements in quality of care.

The study design and sample consisted of a qualitative case study approach using semi-structured interviews (cf. Alvesson and Sköldberg, 2009), which also gave the possibility for follow-up questions. Nine respondents – three physicians, two nurses, two managers, one care developer, and one politician – participated in the study. In order to participate in the study, it was important that all respondents had a decisive role in the implementation of the MHT innovation. This was seen as an important way to increase the validity of the findings. As the respondents had different roles and professional backgrounds, they gave a rich and different perspective on the innovation system to help understand the more complete overall phenomena of MHT and its complexity. Furthermore, data saturation was used as a criterion for discontinuing data collection. This view of saturation centers on the question of how much data (in this case interviews) are needed until nothing new is apparent. After 9 interviews the researchers began to hear the same comments meaning that the new data was redundant of already collected data. At this stage

the researchers stopped collecting more data and started to analyze what was collected. The interviews were conducted at the hospital between March and December of 2020 and lasted approximately 40–95 minutes each. They were recorded and transcribed. The principles of the Helsinki Declaration (General Assembly of the World Medical Association, 2014) were followed for all interviews, where respondents obtained information on the research aim, that it was voluntary to participate in the study, and that they could withdraw from the study at any time. Moreover, all respondents were guaranteed that the data would be treated confidentially.

The interviews followed an interview guide with semi-structured questions where the respondents were encouraged to describe their experiences of what promotes and hinders innovation. Moreover, to better understand what promotes or hinders innovation, the functions for innovation, as described in the framework by Larisch et al. (2016), were included and represented in the interview questions. Questions asked included the following:

- "Can you tell what role you had in the MHT innovation and what is your role today"?
- "Can you tell us about the experiences concerning your innovative working"?
- "What were the successes and downfalls of the MHT innovation? What resources did the MHT innovation depend on"?
- "How was the innovation accepted by the healthcare professionals"?

To test the interview guide, a pilot study was carried out. The pilot study proved to be useful in providing insights into the interview questions, which in this study involved some minor changes such as new words and changes to the sequence of the questions.

As the interview guide included questions related to the functions for innovation established as a framework by Larisch et al. (2016), the transcribed interviews were analyzed using a deductive approach. This means that predetermined codes were applied to the data. First, the codes were created from the framework by Larisch et al. (2016). These initial codes were further refined and developed through continuous discussions amongst the researchers. Thereafter, data from the transcripts were sorted into those predetermined framework-based categories using digital tools. Quotes from the respondents are used to help describe specific categories. Theoretical saturation was sought during the analysis. When no additional codes and insights related to what promotes and hinders the implementation of MHT were identified, theoretical saturation was achieved. Larisch et al.'s (2016) functions capture both the structural characteristics and dynamics of an innovation system and the dynamics of a number of functions that directly influence the development of a new way of working. In their proposed framework, the authors emphasized that the framework can be used to analyze an innovation system. As the studied innovation presented in this paper has had mixed success, the Larisch et al.'s (2016) functions framework enables a broad and deep analysis of the innovation focusing on what promotes and hinders innovation in the context of healthcare organizations.

4 Results

This section presents empirical data regarding what promotes and hinders the implementation of MHT according to the seven functions described by Larisch et al. (2016).

4.1 Knowledge development and diffusion

4.1.1 Promoters

Management support has made it possible for some healthcare professionals that acted as champions to spend time and resources on knowledge diffusion. Consequently, healthcare professionals were given the opportunity to spread information about the innovation with internal and external

organizations and society as a way of finding supported alignment for the innovation. This was done through study visits, seminars, and conferences.

> *"Time was spent on spreading knowledge of the concept. Study visits were also carried out, which took time. We spent a lot of time on this and support was important."* (Nurse 2)

> *"We created study visit groups. Each group reported on their impressions from the study visits. This work became the basis for the initiation of MHT."* (Care Developer 1)

To ensure a successful implementation and adoption of the innovation, a scientific evaluation of the project was conducted when the innovation was up and running. This helped increase legitimacy for the new way of working.

> *"We received scientific funding to highlight the process of the innovation as we were doing something completely new. The innovation is a new paradigm shift, we started to work in a new way. We wanted to conduct an evaluation early in the project to get legitimacy and make the adoption easier, but it did not happen until later."* (Nurse 2)

4.1.2 Hindrances

Interdisciplinary networking and collaborations increase the level of knowledge development and diffusion about an innovation. The knowledge development and diffusion are important at the beginning of an innovation, but also throughout the innovation process. However, our empirical results showed that many of the physicians from the hospital did not have an interest in geriatric care. Some of the physicians who were educated in this field decided to quit their employment, meaning that important knowledge about the innovation was lost. The absence of physicians (lack of skills) resulted in a work pressure on the remaining nurses who worked within the MHT. It also had a negative effect on how the innovation was perceived by other healthcare professionals, both within and outside the organization. One of intertwined managers argued the following:

> *"Hospital physicians were trained as geriatricians. However, after completing the education, most of them leave. Those who chose to complete a clinical education in geriatrics out of self-interest may have a greater interest in the area, while the others who were trained may not have that level of interest that is needed in order to stay in the organization."* (Manager 2)

Building an interdisciplinary team with different competencies (such as geriatricians, physiotherapists, occupational therapists, and dietitians) was an important goal for the innovation, and was especially important in order to be able to meet the variation in patients' care needs. However, this was a challenge given that the project struggled with staffing the MHT.

> *"A team that works with patients who have different needs should consist of several competencies that together can understand the whole picture of the patients' health conditions, which is a challenge."* (Nurse 2)

4.2 Legitimation

4.2.1 Promoters

Creating engagement and commitment among employees became important for the MHT innovation. In particular, it was important to receive support from physicians in order to provide medical care at home. One of the interviewed care developers argued:

> *"It was important to be out in the organization at all times and working with anchoring the innovation and creating an understanding for the innovation. We wanted to avoid a situation where employees felt that they were not a part of the innovation and forced to work based on the new way of working."* (Care Developer 1)

Moreover, to gain acceptance and support for an innovation, a management team across organizational boundaries was needed to formalize champion roles and provide clarity in roles associated with the implementation.

> *"MHT innovation needed people with a mandate who could decide and discuss what could be contributed."* (Physician 1)

Another important part of legitimation was to give team members with the MHT innovation the freedom to design their own way of working in the new innovation. In order to find a way of working, collaboration between different professions was crucial. One of the nurses explained this as follows:

> *"We all got great freedom to shape the MHT's process."* (Nurse 2)

4.2.2 Hindrances

A hindrance to the legitimation of MHT was the absence of necessary physicians to participate in the innovation. Working with patients in MHT meant taking on more extensive responsibility than physicians usually needed at hospital care. This is perceived as one the reasons for the difficulty recruiting doctors:

> *"MHT requires that physicians must spend time in a car. Most doctors in medicine do not like to drive cars; they like to work. We are happy to make 20 tough decisions as long as we do not have to take a taxi. We are super specialists in hospitals, we are not generalists."* (Physician 3)

4.3 Resource mobilization

4.3.1 Promoters

MHT was seen as an important innovation at all management levels. Hence, the innovation had a clear mandate to be implemented in the organizations. Time for research and business development, as well as follow-up quality analysis, including health economic analysis and involvement of stakeholders, was discussed early in the life-cycle of the innovation.

> *"Various functions are needed to make it work, civil servants, politicians, and healthcare professionals."* (Politician 1)

Moreover, MHT was initially person-bound. After several setbacks, MHT became function-bound. In this way, that reduced vulnerability. However:

> *"It was not the MHT per se that reduced the number of hospital beds, but all receptions at the hospital."* (Physician 3)

4.3.2 Hindrances

Resource mobilization was dependent on available financial capital and human resources, as well as management infrastructure. In the MHT, human resources were lacking. The healthcare professionals did not have enough time allocated. Moreover, there was initially a lack of a cohesive management structure, which resulted in disappointed staff where some later chose to leave the organization. Without resources, an innovation cannot survive over time, even if it is driven by enthusiastic personnel.

> *"We, as a team, had a lot of thoughts about how we wanted to develop the innovation, but the needed resources for the innovation did not arrive as there were too many organizational levels to go through, and I got tired."* (Physician 2)

> *"It is a challenge when you open up for a new innovation that is a matter of supplying human resources."* (Physician 3)

4.4 Entrepreneurial experimentation

4.4.1 Promoters

Healthcare professionals who believed in the MHT were initially committed to the innovation. The innovation environment was permissive and they learned by doing and testing. One of the respondents claimed the following:

> *"The success of the MHT has depended on the interests and passion of nurses for this innovation and that they had the ability to think outside the box."* (Physician 2)

Another respondent emphasized:

> *"We have earlier learned about what doesn't work and the innovation would not have survived without this experience. Sometimes you walk on sidetracks and you learn something that you take with you in another project."* (Physician 3)

4.4.2 Hindrances

Uncertainties about the project's survival took energy from the healthcare professionals. Long and unclear decision paths and an innovation organization that did not always support new thinking/ideas damaged the cooperation in the MHT and the relationship between professional groups, and other professionals.

> *"Some doctors in the team were too independent, which meant that the work developed in different directions and they created their own contexts. In addition to differences between the teams, it also created a gray zone that made it difficult to distinguish the division of responsibilities between specialist care and primary care."* (Manager 2)

4.5 Guidance of search

4.5.1 Promoters

One important goal of MHT was to inform all healthcare professionals that patients included in the MHT will receive care in their home instead of hospital or primary care centers. However, the guidelines for which patients qualify for inclusion in MHT were unclear at first. Moreover, one physician described the start of the innovation as a phase in which the team did not have an unequivocal belonging to either the hospital, primary care, or municipalities. Because of that, a coordinator was linked to the MHT. The deputy director expressed the need for knowledge about organizing and structuring as follows:

> *"We in the leading positions could attend meetings together, but when it was time for implementing what we had decided, a coordinator was needed so that it would work well between the meetings."* (Manager 1)

4.5.2 Hindrances

At the beginning of the initiation, MHT focused on patients who were aged 75 years or over and had multiple diagnoses that needed high healthcare resources. The resources needed to handle this patient group often created conflicts when partnering organizations could not agree on both search direction patterns, as well as the potential redistribution of resources. For example, there were conflicts regarding the allocation of resources for providing MHT. Despite being successful at reducing inpatient care episodes among patients to primary care and hospitals, the maximum number of patients included in the MHT was initially limited. That perception gave rise to the call for change. Hence, a new organization was implemented:

> *"The new method replacing the older one has the purpose of having shorter service times for more patients, meaning that more people can be helped. Through that, it is expected that there will be a further reduction in the number of admissions to the hospital."* (Nurse 1)

4.6 Market formation

4.6.1 Promoters

To make the MHT more available, the reorganization meant a change in the responsibility for the patient. The age limit for receiving care within MHT was changed from 75 to 18 years. That resulted in the concept of the innovation becoming more demand-driven, focusing on the care needs of the patients regardless of age or diagnoses.

> *"We had independent doctors, which meant that the work developed in different directions and they created their own contexts. In addition to differences between the teams, a gray zone was developed making it difficult to distinguish the responsibilities between specialist care and primary care. Too much independence in some may have damaged cooperation within the teams, not least with other professional groups."* (Manager 2)

4.6.2 Hindrances

The previous organization of the MHT depended on people/individuals. When employees left their position, the project was affected negatively. After several setbacks in supply and demand, it was decided that a new organization should be created for MHT. This meant that responsibility for the innovation would be distributed over different scope of areas and hence be based more on functions rather than individuals. The role of the management was important in the creation of the new organization.

> *"It was decided to create a new organization, so it would be less vulnerable, an organization that is less dependent on specific individuals. [In an organization that is individual-centered] if a person quits, you have to shut it down, because that's how it has been before. Instead, there have to be functions and more business areas that are involved in running this innovation."* (Nurse 1)

4.7 Creating system-wide synergies

4.7.1 Promoters

Patients sought healthcare from different care providers and collaboration across organizations became important. Effective communication between hospital and municipality facilitated the work. It also created confidence for the MHT when a home care physician was available for their patients.

Moreover, an important impact factor for the MHT was to spread the working method through different channels and levels. In this way, networks and relationships were created.

> *'We were presenting everywhere. It was positive because then we create relationships, which we have done at all levels."* (Nurse 2)

4.7.2 Hindrances

Sometimes the professional groups did not manage work within their own area of responsibility. Here, it was discussed that a clear leadership was needed to make the MHT work. If everyone adhered strictly to their professional roles and job descriptions, it became difficult for MHT to evolve and be spread.

> *"Clearer guidance was needed. It has been difficult to distinguish which levels do what."* (Physician 3)

> *"Even if you wanted to do a lot, you had in mind that you were not allowed to do that. There was also this thing about anchoring the work and getting it out to everyone; it was a challenge."* (Care Developer 1)

5 Discussion and Conclusion

5.1 Discussion

The aim of this study was to explore what promotes and hinders the implementation of innovation in healthcare's complex organizational environment. The results reveal several factors that promote and hinder the emergence and diffusion of an innovation. These are mostly in line with the seven functions described by Larich et al. (2016) (see Table 1). The studied MHT innovation clearly demonstrates that implementing and adopting innovations in healthcare is complex, especially when the innovation requires involvement of many elements and relations.

Firstly, the MHT innovation is a complex innovation involving different levels of care, different healthcare professional groups and patients with multiple diagnoses and complex care needs. The complexity of the innovation seems to determine the likelihood and speed of the adoption among healthcare professionals. Raising employee awareness of the innovation and providing them time to understand and disseminate their knowledge about the new way of working is an important promoter for encouraging the adoption and diffusion of the innovation (F:1). However, time as a single facilitator is not enough for a successful innovation implementation. Another important promoter is the active involvement of personnel with the right skills to participate in the innovation that highlights a new way of working (cf. Day-Duro et al., 2020). Physicians' lack of interest in working with patients in patients' own homes is obvious and shows the difficulties that can occur in an innovation. It is also important to raise employee awareness of the innovation through different communication strategies.

Secondly, the active involvement and participation of physicians that can act as champions is a vital promoter for legitimizing a new way of working (F:2) (see also Eriksson and Müllern, 2017). It is also a key for reducing the uncertainty associated with the introduction of new ways of working (Dryden-Palmer et al, 2022; Miranda & Prado-Román, 2018). This is according to Larisch et al. (2016) a matter of social acceptance and compliance with relevant institutions. Moreover, an early evidence-based approach to an innovation can facilitate and strengthen legitimacy and generate insights that guide development of the innovation. However, this scientific approach requires data to be collected and analyzed throughout the innovation process. These aspects of scientific evaluation have not been clearly predictable in previous studies (for example, Larisch et al., 2016; Lifvergren et al., 2012), they are seen as an important contribution in the present study.

Thirdly, when an innovation is introduced into the organization, sufficient resources must be allocated to the adoption and development process. Time and strong financial support are often mentioned as important success factors in the literature (Larisch et al., 2016; Boudreau et al., 2016) (F:3). However, as seen in the MHT case, human resources (employees with the right skills) are at least as important, if not crucial. In the MHT case, there were difficulties finding physicians with the right skills and motivating them to remain in the organization. A lack of employees with the right skills can hinder an innovation from becoming accepted from inside and outside of the organization.

Fourth, implementation of an innovation usually results in an organizational change. Innovation for guidance of search (F:4) is the step towards a redesign of a previous organization. To have one and the same organizational affiliation is important because personnel in an innovation need local and close leadership. A well-functioning resource mobilization promotes a functioning innovation. Cohesive leadership structure for all personnel is needed when change occurs (Hussain et al., 2018). The leadership's influence on how the work is to be conducted by the same management organization to all participants turns out to be significant for the possibility of developing and preserving an innovation that has not been clearly predictable in Larisch et al. (2016). The sustainability of such an organization is to identify and direct activities towards critical needs and problems.

Fifth, the presence of entrepreneurs in innovation systems (F:5) is a matter of course (see also Eriksson and Ujvari, 2015). These entrepreneurs are fostering innovations. With a permissive innovation environment, personnel can have the opportunity to develop their way of working by "doing and testing", which is clearly evident from the MHT case. While this attempt does not always work, that failure provides knowledge. This way of developing an innovation provides knowledge that enthuses personnel by learning from trial and error and reducing uncertainties inherent to innovations.

Sixth, over time the MHT innovation became more accessible and demand-driven, with a focus on the patients' need for care. Therefore, it is important to relate to the market for the innovation to survive (cf. Stiernstedt, et al., 2016). Market formation (F:6) in healthcare is more constrained by regulations than markets typically are. Innovations can change market formation through benchmarking and internally at the hospital, which is highlighted in government investigations. Thus, markets can accelerate the learning process among other organizations by enabling comparisons and relating to initiated innovations.

Seventh, an innovation can be a gateway for further innovations. The present innovation has enabled the initiation of likewise innovations within healthcare. Moreover, creating system-wide synergies (F:7) across organizations became important in order for a new innovation to work. As Larisch et al. (2016) showed, open innovation platforms and entries on new actors' support network synergies.

5.2 Conclusion

The present study shows what is required for the implementation of an innovation in healthcare to be successful. The MHT innovation has introduced a new and unique way of caring for patients at their home while reducing avoidable inpatient care and/or emergency visits. In order to understand challenges in an innovation process, the results of this study demonstrate several aspects that promote and hinder innovation. Important contributions from the study shows the following:

- Interdisciplinary cross-functional collaboration between involved organizations promotes knowledge development and diffusion, which is important for the survival of the innovation.

- Legitimacy for an innovation can be strengthened if champions are involved.

- Early scientific evaluation of the innovation is important in order to gain legitimacy. Having an evidence-based approach throughout the innovation life cycle has not been clearly projected in previous studies and is therefore seen as an important contribution.

- Access to human and financial capital is a prerequisite for innovation sustainability.

- Innovations need entrepreneurs.

- Markets can accelerate the learning process among other organizations by enabling comparisons relating to initiated innovations.

- Open innovation platforms support network synergies.

When applying the innovation frameworks function on the empirical result, we have seen that the importance of the functions and their relation to each other varies over time. Since this has not been the aim of the present study, further research is needed to explore the importance of the functions related to the life cycle of the innovation and their interrelationship. This understanding can develop new knowledge about how the functions can be used in the different phases of an innovation life cycle in order to achieve sustainable innovation.

5.3 Further research

Further research is needed in order to understand the importance of the functions in the studied framework by Larisch et al. (2016), and whether these functions (1–7) have different meanings in different phases of an innovation life cycle. Further research is also needed to clarify the ranking of the different functions among themselves and whether this ranking changes over time in the different phases of innovation. Another relevant question to study further is: When does the transition occur from the individual-centered function of an innovation (the initial carriers of innovation) to a sustainable organization that is not dependent on fiery spirits? Moreover, the contextual impact of how it affects an innovation needs to be further researched.

5.4 Practical implications

By identifying promoters and hinders this study gives practical implications to the healthcare organizations by promoting discussions and reflections on healthcare innovations among managers and healthcare professionals before, during and after the innovation process. The identified promoters and hinders can be used as a basis for discussing and understanding innovations

and what is required for it to be successful. Moreover, this study highlights the importance of conducting a scientific evaluation of the innovation both before and after implementation, something that existing literature, to our knowledge, does not discuss. Hence, we see this as an important contribution to theory.

5.5 Limitation of the study

The study has examined an innovation that has had varying degrees of success at different times through the innovation life cycle. Studying what facilitates or inhibits an innovation related to the different stages of the innovation process can help increase the survival rate of innovation implementations in healthcare. There are however some limitations to this study. The low number of respondents is one of them. However, the respondents who participated in the study had a key function in the MHT innovation, therefore expert opinions have been obtained. Thus, we do not believe that the outcome of the result would have been different if more people had been interviewed. Moreover, the importance of context is also important when studying innovations in public organizations.

The political governance and financial opportunities in a broad sense need to be analyzed for a more complete understanding which the present study has not addressed.

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Biographies

Nomie Eriksson. Nomie Eriksson, PhD, is Associate professor at School of Business, University of Skövde. Her research concerns issues about; organizational change, strategic and operational management and operational development with a focus on working models. Her doctoral thesis from professional organizations used the empirical studies from two hospitals and several clinics to illustrate support and obstacles to change in professional organizations when new leadership and quality models were launched, and in some cases also implemented. Studies have also been conducted on how municipal managers influence the ability of municipal economic development and business development. She has authored book chapters and articles about her results. During the last years, her research preferably conducted within the health sector, with a focus on the study of organizational development and improvement.
ORCID: https://orcid.org/0000-0001-5718-0100
CRediT Statement: Conceptualization, Data curation, Investigation, Methodology, Validation, Vizualization, Writing-original draft, Writing-review & editing

Hanife Rexhepi. Hanife Rexhepi is an Associate Professor in informatics at university of Skövde, Sweden. Hanife Rexhepi has extensive experience of studying the impact of digital tools on healthcare professionals and patients. As a member of the DOME research consortium and through participation in the NORDeHEALTH project she has explored patients' and healthcare professionals' experience with patient-accessible online health records. At the moment she leads a research project that aims to study the implementation of GPS alarms for enhanced safety and independence among older persons.
ORCID: https://orcid.org/0000-0001-8957-9853
CRediT Statement: Conceptualization, Data curation, Formal Analysis, Investigation, Methodology.

Reza Javid. Health economist and statistician in profession, at Skaraborg's hospital. Part-time PhD student with research project about health-economic perspective on digitalization within specialized healthcare settings. Reza has a special interest in innovation in healthcare setting, with special focus on innnovation projects that help patients get help on distance or at home.
ORCID: https://orcid.org/0000-0001-9299-5620
CRediT Statement: Investigation, formal analysis, writing - original draft

Erik M. Djäken. Erik, an engineer specializing in biomedical technology, holds more than 15 years of experience in healthcare innovation leadership at the Region Västra Götaland and Region Stockholm.
ORCID: https://orcid.org/0009-0006-4569-8504
CRediT Statement: Investigation, Formal Analysis.

Svante Lifvergren. Svante Lifvergren, MD, holds a PhD in Quality Sciences and is an affiliated lecturer at Chalmers University of Technology in Sweden. He is also a specialist in internal and pulmonary medicine. His research areas entail action research, especially in a healthcare setting. He has previously published articles on e.g., integrated care, process management, the management of variation in healthcare systems etc.
ORCID: https://orcid.org/0000-0001-5810-8290
CRediT Statement: Conceptualization, Methodology