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Leaders' experiences of successfully implementing health and welfare technology in sparsely populated Nordic areas

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ABSTRACT

Purpose: This study examines the effective implementation of health and welfare technology (HWT) in sparsely populated Nordic regions within healthcare and social care settings.

Materials and methods: Through re-analysing 12 semi-structured interviews conducted in 2020 across three successfully implementing Nordic regions, the research utilised inductive thematic analysis with a reflexive approach to uncover key experiences.

Results: It identifies five critical success factors: Positive attitudes towards and understanding of digital transformation, Consensus on changing care delivery through HWT, Leadership and organisational readiness for change, Effective feedback mechanisms, and Trust and engagement in the learning process. Highlighting the significance of positive mindsets, leadership, collaboration, and adaptability, the findings underscore the theoretical underpinnings of Weiner's organisational readiness for change and Bronfenbrenner's ecological system theory for planning and understanding HWT implementation. Addressing challenges of adapting to HWT necessitates a comprehensive approach, including tailored training, robust support systems, strategic user engagement, feedback integration, and fostering open communication, ultimately ensuring technology serves the user's needs effectively.

Conclusion: In conclusion, successful HWT adoption in these areas hinges on fostering a culture of learning, strong leadership, and collaborative efforts. It suggests further research with a larger cohort to validate these insights, offering vital considerations for organisations navigating digital transformation in healthcare and social services.

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> IMPLICATIONS FOR REHABILITATION

- Encourage a positive attitude towards technological advancements and digital transformation among healthcare and social care organisations to facilitate the successful implementation of health and welfare technology (HWT).
- Invest in leadership training to equip leaders with the skills needed to effectively guide teams through the adoption of HWT.
- Foster interdisciplinary collaboration among stakeholders, including healthcare providers, therapists, and technology experts, to seamlessly integrate HWT into the rehabilitation process.
- Promote staff adaptability to evolving technologies by providing training and support for adapting to new tools and practices in HWT implementation.

Introduction

European countries, including those in the Nordic region, are undergoing significant demographic change, with the increasing older population exceeding the capacity of welfare service provision (healthcare and social care). The ageing population is dramatically increasing the need of welfare service providers. The old-age dependency ratio in the European Union (EU) is projected to increase by more than 21% by 2070, meaning that the EU will only have two working-age people for every person aged over 65 years, compared with the more recent old-age ratio of 3.3 [1]. Due to this proportion of older adults increasing and employed people decreasing, there will be challenges in both the staffing and financing of care, extending to the healthcare and social care that will be provided to for older people with health-care and social care needs.

Health and welfare technology (HWT) is a broad term and covers assistive technology, digital technology, and technological aids. Examples of HWT include security alarms, night cameras and various types of digital planning tools. It is expected to offer a range of benefits, such as improved patient outcomes, increased patient satisfaction, enhanced collaboration among healthcare providers, better use of staff competence and increased cost efficiency [2]. HWT can deliver healthcare to rural and remote populations and improve the accessibility of healthcare among rural and remote populations [3], and thus provide the opportunity to reduce overall costs and stress on often overburdened welfare systems. HWT can mitigate this by providing out-of-hospital care and reduce the overuse of emergency care and the travel expenses accumulated by rural patients as well as provide regular check-ups using digital solutions [4].

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The high expectations of HWT as a solution to several challenges in health and social care are apparent in all Western societies, whose governments have allocated generous funding to promote HWT innovations in care services [5]. Politicians commonly view innovations as a necessity for prosperity and progress in society [6], and HWT innovations in healthcare and social care are high on the agenda [7]. Politicians and decisionmakers, among others, believe that HWT will provide a solution whereby fewer employees are needed in providing more extensive welfare services. Such a profound technology transformation means there will be extensive changes in how healthcare and social services are delivered, but this will lead to additional challenges due to the complexity of implementing new service models supported by HWT solutions. The overall challenges and the implementation of HWT require improvements in terms of skills, how work is organised and the ability to deliver successful implementations.

Indeed, technological innovations are gradually changing the landscape of healthcare, social health and care services, where there is a shift to digital technology that will play an increasingly important role in specific care solutions and also providing more effective patient and client-focused processes and facilitating independent life. The rapid adoption of HWT is crucial for realising these benefits and for meeting the growing demand for quality and cost-effectiveness in healthcare and social care services [8].

The integration of routine HWT in organisations covers different aspects, and within implementation theory, several determinants are proposed to determine the outcomes of its implementation, such as the technology (e.g., characteristics of the innovation being simple or complex); users' perceived need and attitude regarding the technology; contextual factors (e.g., financial resources) and implementation strategies (e.g., professional education and training) [9,10]. Furthermore, these determinants are interrelated and occur at multiple organisational levels, are complex and require considerable work, since they interact and together contribute to the success or failure of the implementation. In an implementation, it is a challenge to identify the determinants (i.e., barriers and facilitators) and the determining strategies to address them [11]. Furthermore, organisational readiness for change is considered a critical precursor to successful implementation, and researchers have suggested that the lack of establishing sufficient readiness in an organisation accounts for one-half of the failure of large-scale implementations [12–14]. Yet, despite great interest and intensive "hype", as well as many pilot projects with promising results, fewer solutions than expected have been implemented [15–17]. There have been attempts to identify reasons for this slow adoption, but they have been limited to individual studies or expert opinions [16].

In the Nordic region, health and social care organisations are facing challenges in adopting HWT at the pace that is required, making it important to understand the mechanisms behind this process and to share experiences of HWT implementation. The rationale for exploring the implementation of HWT in this region lies in the need for improved and efficient delivery of healthcare and social care services.

Background

Health and welfare technology

Many terms can be used to reference HWT. It is understood in a broad sense as an umbrella concept mainly used in the Nordic countries that covers technologies that have the potential to

maintain and improve individuals' functioning, safety and security, health, activity, participation and independence, thereby promoting their well-being and reducing the need for formal and informal care [5,18,19]. In a systematic bibliographic review, Stoumpos et al. [2] analysed the changes taking place in the field of healthcare due to digital transformation and identified the most common concepts as telemedicine, mHealth and eHealth. Considering that healthcare does not include elderly care in the social services context, it should be deemed that healthcare is a part of elderly care due to the increasing *ageing in place* trends. Regarding HWT, the focus has thus far been on safety and security (safety alarms) and, to a lesser extent, on the values of quality of life, activity, social participation and independence for individuals. Supported contact and communication are not clearly visible in the definition. Wamala Andersson et al. [20] included a caregiver perspective when defining HWT as "a technology-based intervention that aims at maintaining or promoting health, wellbeing, quality of life and/or increasing efficiency in the service delivery system of welfare, social and health care services, while improving working conditions of the staff"(p1). The technology is used, for example, to maintain or increase security, activity, participation, or independence for individuals. This paper takes its point of departure in an inclusive definition of HWT, including technology with the aim to support users (patients, clients, older adults, persons with disability and their relatives) in their daily lives with increased or maintained independence, safety and security, health, activity, participation, and quality of life. For welfare service providers and staff, the aim of HWT is to deliver increased efficiency in their service delivery systems and social and health care services as well as to improve working conditions.

Implementation of HWT

Digital transformation is defined as the adoption of current digital technologies, such as social media, mobile technology, analytics or embedded devices, to enable major business improvements that include enhanced customer experiences, streamlined operations or new business models [21]. Previous research has emphasised the difficulties and delays in integrating new technology with existing organisational processes, tasks and workflows as well as misalignment with clinical processes, disruptions to face-to-face communication and undefined and changed roles, which are some of the key barriers [22–24]. The implementation of innovations is challenging for both organisations and staff; often involves substantial investment in time, costs and staff; and is also often cognitively and emotionally demanding.

Contextual factors and their relevance in implementations are reflected in several theories, frameworks and models within implementation science [9]. Several similar concepts are in use when referring to context (e.g., environmental factors and inner and outer setting) [25]. In a scoping review of 17 determinant frameworks within implementation science, contextual factors were found to have been mentioned by several researchers in terms of affecting the *organisational readiness for change*, where those most frequently used are financial resources, social relations and support leadership, organisational support, culture and climate [25]. Context can be conceptualised as passive or concrete (e.g., physical environment), or they can be more abstract (e.g., support from peers or management) [26]. Several studies have stressed the importance of the role of leaders in the implementation process and their impact on fostering change [27–29].

Birken et al. [28] highlighted the importance of middle managers and suggested they can influence healthcare innovation implementation by diffusing and synthesising information,

mediating between strategy and day-to-day activities and selling innovation implementation. Aarons and Sommerfeld [30] found that transformational leaders predicted a greater climate of innovation during implementation. Williams et al. [31] found that when leaders increased their frequency of implementation leadership behaviours (i.e., they were proactive, knowledgeable, supportive and perseverant during implementation), the organisational evidence-based practice implementation climate improved.

Materials and methods

The “Health Care and Care Through Distance Spanning Solutions” project (VOPD project) was initiated under Sweden’s Presidency Programme for the Nordic Council of Ministers in 2018. The project aimed to improve healthcare and social care accessibility across the Nordic region, with a special focus on sparsely populated areas. By leveraging digital solutions, the project addressed demographic challenges, regional imbalances, and the need for operational efficiency in healthcare service delivery. Successful implementation examples include telemedicine platforms allowing remote consultations, digital health records for efficient information sharing, and mobile health apps that encourage self-care. One standout example presented in the project is the use of virtual health rooms in Sweden and Denmark, which offer faster diagnoses and treatments without the need for patients to travel long distances, thereby enhancing the quality of life and reducing operational costs [32].

As a part of the VOPD project, leaders in healthcare and social care in the three regions of Sogn and Fjordane in Norway, North Jutland in Denmark and South Karelia (Eksote) in Finland shared their experiences of digital transformation (the successful implementation of HWT) on their daily work and skills provision [33]. The regions are defined as sparsely populated areas, with a low population density relative to its geographical size. Organisations in sparsely populated areas face distinctive challenges and must adapt to meet the rising demands for healthcare and social care services. These challenges include a shortage of healthcare professionals and resources, the complexity of implementing innovative service models, difficulties in recruiting and retaining skilled workers, and the necessity for significant enhancements in skills provision and organisational restructuring. To navigate these obstacles, such organisations are increasingly focusing on digital transformation, leveraging technology to improve service delivery, access to care, and overall quality of healthcare services. This approach requires a radical rethinking of work processes, along with a commitment to digital solutions, to address the unique logistical and infrastructural challenges of operating in remote and rural settings.

The idea behind the project was to give a voice to healthcare and social care leaders to learn about the effect of digital transformation from their daily work. The results of the project provide a description of what it means to work with a service model that is partially supported by digital solutions. Healthcare and social care organisations that had started the process of transformation did not believe that their employees wished to return to the previous system. Furthermore, the leaders who had been interviewed were overall positive about digital transformation. From the interviews conducted for the project, it was understood that there was potential for more knowledge and understanding to be provided regarding the successful implementation of HWT. The purpose of this study was therefore to investigate the success factors in implementing HWT from the perspective of healthcare and social care managers in sparsely populated Nordic areas.

The present study has re-used data (semi-structured interviews) collected by the Health Care and Care Through Distance-Spanning Solutions Project [33] in 2020. Due to the Covid-19 pandemic, only online interviews were conducted, and these have been further analysed to better understand Nordic health care and social care managers’ experiences of successful HWT implementation in sparsely populated areas.

In the project, participating regions were selected to build synergy with earlier Nordregio studies and to represent sparsely populated areas in the Nordics. Within each of the three selected regions, leaders including HR directors, operations managers, unit managers, project managers as well as nurses and physicians at both a municipal and regional level were selected for the interviews. A total of 15 interviews were conducted for the project, including six in each of Denmark and Norway and three in Finland. Of the 15 original interviewees, 12 provided their informed consent in May 2022 to re-use the interviews. The three dropouts were interviewees who had ended their employment and for whom no new contact information was found. The dataset for the present study included 12 interviews, two representing Finland and five each representing Denmark and Norway.

Early in 2021, one of the authors (CG) met Bengt Andersson, a senior consultant at the Nordic Welfare Centre, and was offered the interviews for research. During the discussion, it was understood that the interviews were rich, containing experiences of implementing HWT in sparsely populated areas. A research team was formed, comprising CG and PD, with Bengt Andersson tasked with collecting informed consent from the interviewees.

The study re-utilised secondary data from 2020 to delve deeper into the nuances of HWT implementation in Nordic regions. The data, originally collected during the COVID-19 pandemic, were gathered under unique circumstances that allowed for an in-depth exploration of HWT implementation during a period of increased reliance on digital health solutions. The pandemic context provided a rich backdrop for understanding the accelerated adoption and innovative application of HWT in healthcare and social care management, in sparsely populated areas. The semi-structured interviews used for this study offered a broad spectrum of experiences from different stakeholders involved in HWT implementation. This variety ensures a holistic view, capturing the multifaceted nature of digital transformation in healthcare and social care services. The richness and diversity of the data provide a solid foundation for a thorough and nuanced thematic analysis. To ensure the adequacy of this qualitative data for the study’s objectives, a rigorous methodological process was followed, including inductive thematic analysis with a reflexive approach. This process involved detailed coding and theme identification from the data, ensuring that the analysis remained closely aligned with the actual experiences and insights of the interviewees. This methodological rigour, combined with the thematic analysis, provided a solid foundation to extract meaningful insights relevant to the study’s goals, despite the data’s secondary nature.

The interviews varied in their extent, from descriptive narratives with examples to summary narratives, ranging from 1489 words to 3890 words. Some interviews were short yet still described the experiences of implementing HWT, what it entailed and the meanings the interviewees experienced. Others were very long and provided detailed descriptions and examples from healthcare and social care. The interviews represented the different roles of HR directors, operational managers, unit managers, project managers, including their professional backgrounds as registered nurses, physicians, project managers and administrators in both municipal and regional organisations. All interviewees had higher educational degrees. The interviews were conducted by national (Finnish,

Danish and Norwegian) employees at Nordic welfare centres guided by a semi structured interview guide in their respective national language. After the interviews had been conducted, the text was translated into English. The semi-structured interview guide included questions covering demographic data about the interviewee (name, role/function, educational background, and leadership/management experiences). Additionally, it explored the organisation of care and care services, recruitment and supply of skills, and staff experiences. The guide concluded with a closing question: “What do you think has been successful in the organization, and do you have any recommendations to pass on to others based on your experience?” [33].

Ethical considerations

In terms of respecting participants’ informed consent, the research was carried out in accordance with the Declaration of Helsinki. Throughout the study, the ethical principles of the Swedish Research Council [34] and the principles of the Declaration of Helsinki Ethical Principles for Medical Research Involving Human Subjects [35] were followed. Information concerning the interviewees’ participation and the right to withdraw at any time was provided to all the informants in May 2022. Consequently, all the included interviewees provided their written informed consent and were informed about guaranteed confidentiality.

Data analysis

The data extracted to the present study consisted of interviewees’ experiences of HWT implementation in sparsely populated areas. The data were analysed using inductive thematic analysis with a reflexive approach, meaning that the analyst was not looking for anything beyond what the informants had said [36–38]. The six analysis phases consisted of familiarisation with the data, creating initial codes, searching for themes, defining and then naming the themes and, finally, producing a report. Initially, the transcripts of all 12 interviews were read and re-read to extract the features describing their experiences of HWT implementation. The data analysis process, following the six phases presented above, was conducted by the first author and, during the process, discussed between the two authors until consensus was reached. Data extracts consisting of sentences and paragraphs were marked and collated. Initial codes were systematically generated across the entire dataset. The codes were grouped into potential themes, which were identified within the surface meaning of the data (see Table 1). Finally, the relevance of the themes was checked in relation to the codes and the entire dataset. The generated themes displayed different aspects of successful HWT implementation experienced in sparsely populated areas (see Table 1).

Results

The results include the success factors experienced when implementing HWT in sparsely populated Nordic areas. The results hold a structure built of the five intertwined and overarching themes that emerged, namely (a) positive attitudes towards and an understanding of the ongoing digital transformation, (b) agreement on the challenge of changing the way of working/giving care supported by HWT, (c) leadership in change management and the internal organisational conditions for handling change, (d) feedback loops and highlighting the effects and success factors and (e) trust in the ongoing change and enabling the learning process (Figure 1).

Positive attitudes towards and an understanding of the ongoing digital transformation

All the managers mentioned the importance of working to create positive attitudes and an understanding of the ongoing digital transformation. The key factors highlighted that contribute to this are the recognition of the role of digital technology in private life and culture as well as a willingness to test and try new things. For the managers, it was important to foster and create a willingness for change, adaptability, and the acceptance of new ideas, which they believed helped reduce fears and suspiciousness. Positive expectations, enthusiasm and commitment to the digital transformation were mentioned as important factors in driving success. Having positive attitudes towards the change helped create a changed mindset, reducing resistance to the transformation. The theme emphasises the importance of reduced fears and suspiciousness towards digital technology, which can be achieved by building a culture that encourages digital literacy and understanding. A willingness to test new technologies and processes and a recognition of the benefits of these changes can also help to reduce resistance.

The telemedicine solutions are about mindset and cultural work, as it must be about respect for the patient and their time, so that treatment is more on the patient’s terms, and it becomes easier to be a patient. (DK1)

The managers believed that by fostering positive attitudes, individuals and organisations could successfully adapt to the ongoing digital transformation and drive positive outcomes.

Agreement on the challenge of changing the way of working/giving care supported by HWT

This theme concerns the challenge of changing the way of working/giving care supported by HWT. The managers stated that the key factors contributing to this challenge included the need to adapt to digital, dynamic and distance work and the hard work required to change. A shared “digital-first” attitude to remote caregiving and interaction requires adaptability and insights that simplify the ongoing implementation. As a result of societal changes and the pandemic, informal caregiving had increased, and there was a movement away from fieldwork towards screenwork. The managers mentioned awareness and patient participation as important factors in driving this change, as was the expectation of constant feedback corresponding to its explicit goals.

The citizens have been very positive towards telemedicine and have expressed that the telemedicine solutions include both patient empowerment, where the citizens themselves have greater influence on their own illness, and patient efficacy, where citizens gain a greater knowledge of their own illness and can in that way better deal with their illness in everyday life. (DK4)

Staff who were critical but constructive in their feedback were mentioned as important for the implementation, and they were a critical factor who needed to be considered in the implementation planning. Successful digital transformation also requires management to become involved in and committed to the change process. All managers agreed on the fact that care based on the patient’s conditions is better for the patient, but they highlighted that achieving this is complex and that all-over support is needed for a more person-centred approach.

HWT is not always well-developed, reliable, and functional, and the complexity of organisations and activities, the logistic and

Table 1. Examples of the analytic process, from interviews to codes and themes.

Example interview text/citation/meaning unit	Codes	Theme
<p>"From a management perspective, the opposition to digital solutions is over; the hospital management are on the same wavelength as the regional management, and all parties want the digital solution to be maintained and further developed. The professional careers [care staff] are also positive about digital solutions, which has also led to their intensive testing. This was especially intensive during Covid-19, which reduced resistance" (DK2).</p>	Willingness to change, adaptability/acceptance. <i>Other codes:</i> Experiences from a digital private life Culture Daringness and willingness to test Reduced fears and suspiciousness Positive expectations Changed mindset Reduced resistance	Positive attitudes towards and an understanding of the ongoing digital transformation
<p>"It has become easier; the organisation is in continuous transformation with many tracks of change. People are more used to a dynamic workplace and project-based work" (NO1).</p>	Digital, dynamic and distance work Hard work to change Change is a constant condition/normal condition. <i>Other codes:</i>	Agreement on the challenge of changing the way of working/giving care supported by HWT
<p>"The hospital system is a conservative organisation that demands professional support to carry out the changed work, the changes. More and more people are coming up with good ideas for solutions to the demographic challenges. Workflows need to be cleaned up all the time so that they are efficient and innovative; this is a challenge and hard work" (DK4).</p>	Digital-first attitude (remote caregiving; remote interaction; distance work; teleworking from fieldwork to screenwork, from paper to computer) Adaptability and insights that HWT simplifies for all parties Increased awareness and patient participation The beginning of the change and being in the change, Critical HWT users Reliable and functional HWT Consumes time and resources Changed ways of working means changed culture that is hard to execute Break in problems, initiation/implementation problems Older staff do not have the energy to change/be a part of the digital transformation	
<p>"The telemedicine solutions have very positive effects on the citizens, who feel secure with their own illness. To evaluate the effects, it is important to follow, though the effects of the telemedicine solutions are still difficult to identify, since it is not clear what to measure and how to measure them" (DK1).</p>	Providing evidence of positive effects <i>Other codes:</i> Expected constant feedback Result reports, effects and outcomes Success stories and user cases Explicit expectations from all involved (patients, staff, organisation, society)	Feedback loops, highlighting the effects and success factors
<p>"Managers in the organisation are often the driving factor driving transformation. The project managers who are working directly on implementing new solutions are also important in driving transformation" (NO5).</p>	Open minded leaders, listening leaders, project leadership, communicative/dialogue management, supportive management Teamwork, team spirit, commitment <i>Other codes:</i> An organisational strategy, a regional and national plan	Leadership in change management and the internal organisational conditions for handling change
<p>"There is always a resistance to change, and it requires perseverance from the management and also the ability to deal with it and acceptance that it is a natural reaction to new things" (F11).</p>	A society in change Pandemic effects Trust among those involved Common and shared goals and understanding	
<p>"Although digital care work is done alone, in the end, it is done as a team and not as an individual. This requires a lot of team spirit and attitude, working together and realising it is the key to success" (F12).</p>	Using forerunners Joint secretariat, support organisation Complex organisations and activities (logistics and procurements processes, information security) Economy aspects/resources Changing work consumes time Ongoing dialogue, close cooperation, study classes, talk, tell and show Proud of what we have done Collaborations consortiums Anchoring from the top to the bottom Doing it together Communication and dialogue Changed management requires an involved management Support needs at different levels	
<p>"We were allowed to try everything; through trial and error, we succeeded. The customers [patients] have been extremely satisfied" (F12).</p>	Self-learning and trial and error (learning by doing training programs). <i>Other codes:</i> Learn and develop together Trust to handling the change Trust in the staff's capability Time resources Patient and informal caregivers' involvement in the learning process Map of in-house competences and list of needed competences Explicit vision and trust in a society in change Earning and using from the pandemic experiences	Trust in the ongoing change and enabling the learning process

procurement processes and information security can present additional challenges, according to the managers. The economic aspect and resource consumption of the digital transformation are also important factors to consider. The implementation and increased

use of HWT were cultural change factors that can be difficult to execute, especially for physicians and nurses who may be resistant to change. Additionally, there may be initial technology complications. Such problems can include HWT that is not fully

Success factors when implementing HWT				
Positive attitudes towards and an understanding of the ongoing digital transformation	Agreement on the challenge of changing the way of working/giving care supported by HWT	Leadership in change management and the internal organisational conditions for handling change	Feedback loops, highlighting effects and success factors	Trust in the ongoing digital transformation

Figure 1. Intertwined and overarching themes illustrating the success factors when implementing HWT in sparsely populated Nordic areas.

developed or has a lack of interoperability with the existing IT infrastructure. Furthermore, managers mentioned the age of staff, with some older staff members lacking the energy to change and be part of the digital transformation. Overall, the theme emphasises the challenges of changing the way of giving care supported by HWT. The managers agreed that digital transformation is beneficial, such as by increasing patients' participation and simplifying communication; however, there are also significant challenges that must be addressed to adapt to more digital care.

Leadership in change management and the internal organisational conditions for handling change

This theme relates to the importance of leadership in change management and the internal organisational conditions for handling change. All managers agreed that their commitment is essential for driving change and ensuring success. The leadership team must learn and develop together to create effective change management strategies. They highlighted their role in being supportive to staff as vital in adapting to change. The managers had a high level of trust for their staff's capability and considered this to be important, as it helps to build confidence towards and a sense of ownership of the change among staff. Anchoring from the top down and receiving support and trust from higher management is essential to ensure that the entire organisation is aligned and committed to the change effort. Collaborations and consortiums can also be useful for implementing change.

...anchoring is key throughout the process of implementing new solutions. The municipal manager must gain relevant knowledge in order to understand the staff's needs, working methods, and digital systems accompanying the work, in order to have weight when anchoring new solutions to senior-level management. (NO1)

Doing it together is a key factor that emerged from the codes. Effective change management was seen to require open communication and dialogue as well as willingness to listen to feedback and adapt as necessary. Time and resources are important considerations in change management, as the process can be time-consuming and resource intensive, and it is the responsibility of managers to provide them.

Overall, the theme emphasises the importance of leadership in change management and the internal organisational conditions for handling change. Committed leadership/management, collaboration, supportive management, trust in staff, anchoring from the top down, doing it together, communication and dialogue and time and resources are all critical components of effective change management. By working together and leveraging these

resources, organisations can successfully navigate change and achieve their goals.

It was a strength that there was common support for Telecare Nord in all 11 municipalities//...as well as managerial support...//The joint secretariat has been crucial for the implementation, which has helped to solve the challenges that have arisen during the project. (DK2)

Feedback loops, highlighting the effects and success factors

This theme describes the importance of collaboration and teamwork in achieving success in joint projects. The key factors that contribute to successful collaboration are trust between the organisations involved, a shared vision and goals and a commitment to constant development and improvement. The role of management and IT as drivers for change is also emphasised, as well as the need for a digitalisation strategy and a management that listens to staff feedback.

Technology has made the job easier. It is easier to justify the use of new digital services when there is evidence of benefits. (F11)

A common/shared support organisation is necessary for effective collaboration, as is a joint secretariat that provides easy access and understanding. It is important to choose HWT that is appropriate, user-friendly, and effective and that fulfils the organisation's needs. Here, the managers mentioned that key factors include a shared understanding that digital tools are just instruments and of the changed way of doing things (providing health and social services).

The success factors mentioned by the managers included providing evidence of positive effects, sharing success stories and user cases, and having a communicative management that encourages feedback and ongoing dialogue. Having a proud attitude towards one's accomplishments and committing to follow-up and further improvement are also important. The theme emphasises the need for a positive and enabling climate that encourages testing, learning, and doing better. Environmental and society demands, such as the pandemic situation, put pressure on the need for a fast-paced transformation. Working together as a team, with positive attitudes, team spirit and shared learning, is the key to success.

Trust in the ongoing change and enabling the learning process

The theme of trust in the ongoing change and enabling the learning process is essential for successful change management. The managers highlighted that there should be mutual trust between staff and managers and in the organisation's vision and

goals for the change. They mentioned that trust is the foundation of any change management process, as it allows for collaboration and open communication among stakeholders. Time is also a critical factor, as change takes time and requires patience for it to be fully implemented, and all staff were aware of the time perspective for the change.

You have to give time for change—there will always be challenges in changes; it is the normal, constant change. (F12)

Self-learning, trial and error and patient involvement are also essential elements of the learning process. The managers saw the importance of setting explicit expectations and having learning accepted as a part of the implementation process. Project leadership is necessary, and staff expectations should be clearly communicated and understood.

Discussion

Users face challenges when adapting to HWT. It is indeed crucial to understand both the cognitive load and emotional responses that such changes may elicit. Meeting these demands requires a multi-faceted approach. Providing comprehensive training tailored to individual needs can help users understand how to use the technology effectively [39–41]. Furthermore, a robust support system can provide assistance when users encounter difficulties, helping to reduce frustration and increase confidence in using the technology [2]. Additionally, strategies that acknowledge and mitigate the challenges faced by users can enhance their engagement with the technology [39,41]. Integrating feedback mechanisms is another important factor that can help in refining the technology based on user experiences and needs [39,41]. Fostering an environment that encourages open communication can facilitate a smoother transition, allowing users to express their concerns and receive the necessary support. *It is all about making technology work for people, not the other way around.*

This discussion delves into three pivotal areas critical to the successful implementation of HWT in sparsely populated Nordic areas. Firstly, we explore the role of organisational readiness to change (ORC) as a foundational element in embracing new innovations. Secondly, the application of Ecological System Theory offers a nuanced lens through which to view the multifaceted nature of implementation challenges and successes. Lastly, we address methodological considerations essential for interpreting the results, ensuring a comprehensive understanding of the study's findings.

Organisational readiness to change

Scaccia et al. [42] emphasised organisational readiness to change (ORC) as a critical success factor in the implementation of new innovations. The theory, developed by Weiner [14], conceptualises the implementation of change as a collective coordinated effort performed by members of the organisation. ORC is thus referred to as a shared psychological state whereby organisational members feel committed (change commitment) to the change and believe in their collective capability to perform it (change efficacy). Furthermore, ORC is a multi-faceted idea and involves collective actions by many people. Members of an organisation need to be both psychologically and behaviourally prepared to pursue the actions needed in the implementation. ORC focuses on the factors that affect an organisation's ability to successfully implement change. The theory posits two determinants of change, change

valence (how and why members value the change as needed or worthwhile) and situational assessment (task demands, resource availability and situational factors). These two determinants impact change commitment and change efficacy (the appraisal of task demands, resource availability and situational factors). Taken together, it will predict and have an impact on the ORC, and members are more likely to put in effort and demonstrate more cooperative behaviour in the implementation, thereby resulting in more successful implementations. In the present study, ORC goes beyond individual acceptance and willingness to use HWT and is more comprehensive in addressing collective efforts, behaviour change and contextual factors. Contextual factors were mentioned by Weiner [14] but were not focused on in the theory; however, they are likely to have an indirect effect on implementation, since they could impact the commitment and capability to change.

The managers interviewed in the study had all successfully implemented HWT within their units. In this study, our ambition was to explore the experiences of the managers responsible for the implementation, how they described the activities and how they approached the implementation process and worked with their staff. The analysis of the success factors in implementing HWT from the perspective of healthcare and social care managers in sparsely populated Nordic areas resulted in five intertwined and overlapping themes (Figure 1). In this section, the results are discussed in light of two theories, the theory of organisational readiness for change [14] and Bronfenbrenner's ecological system theory [43,44].

Agreement on the challenge of changing the way of working/giving care supported by HWT is a theme that associates with the change efficacy component of Weiner's theory, which refers to an individual's confidence in their ability to successfully implement a change [14]. The results show that there was agreement among the managers that they could cope with the changes needed and that they also believed that the same went for their staff. This indicates what [45] called collective efficacy, that staff shared a positive belief in their collective capacity to perform the actions needed. This is crucial, since implementation processes need actions that coordinate across many individuals. Changing work tasks due to the use of HWT in terms of the way of working/giving care supported by such technology can be seen as a challenging and complex task that requires a high degree of efficacy. Managers can build change efficacy by providing staff with the skills, resources and support they need to adapt to the new way of working. The managers mentioned that they had involved staff in the change process, encouraged feedback and provided training to ensure that staff members would feel confident in their ability to successfully implement the change. According to Armenakis and Harris [46], the active involvement of staff in both planning and the decision-making process can increase the effectiveness of HWT implementation.

The meaning of leadership in change management and the internal organisational conditions of handling change associates with the change commitment component of Weiner's [14] theory, which refers to an individual's motivation and willingness to implement the change. Leaders have an important social influence on staff and can influence how others perceive the importance of HWT and if they use it [47]. The managers mentioned collaboration to facilitate good conditions, including time and other resources, as a critical component and that involvement in the implementation process was crucial. Aarons et al. [48] suggested that an implementation leadership approach consists of the following four behaviours that are included in four dimensions: (a) being knowledgeable about the innovation being implemented; (b) being

proactive and solving problems; (c) supporting others in the implementation process; and (d) persevering through the ups and downs of the implementation process. The managers mentioned that HWT had a significant impact on daily work and that they were aware that this required a changed culture, meaning they understood the time perspective and the need to be consistent and build sustainability.

Committed leadership/management is essential in driving change and ensuring success. Managers can build change commitment by creating a shared vision and goal, involving staff in the change process, providing support and building trust. Theories in the field of organisation suggest that the implementation climate operates as a mechanism between implementation leadership and implementation outcomes [48,49]. Additionally, leaders should communicate the importance of the change, listen to staff feedback, and provide incentives to ensure that staff members are motivated and committed to the change effort. Research supports that leaders can achieve better implementation outcomes when they are supportive, knowledgeable, proactive and perseverant during implementation [50].

Feedback loops, highlighting the effects and success factors is a theme that aligns with all three components of Weiner's [14] theory. By highlighting the positive effects and success factors of the change, managers can enhance change valence, efficacy, and commitment. They can do this by sharing evidence of the positive effects, creating a culture of continuous improvement, following-up and rewarding achievements and focusing on supporting the change. Additionally, they can provide training and support to ensure that staff members have the skills and resources they need to implement the change successfully. By doing so, they can create a sense of ownership, commitment, and confidence among staff members, which can enhance organisational readiness. Schein [51] posited that leaders impact culture and climate through a primary embedding mechanism, that is, what they pay attention to; the values and rewards; the measures and controls; the resources allocated; and role modelling, teaching and coaching. Dannapfel and Nilsen [52] provided example of this, in that leaders paying attention and measuring and controlling on regular basis were the most important mechanisms for establishing a culture conducive to the implementation of evidence-based practice.

In *trust in the ongoing change and enabling the learning process*, the theme refers to the organisation's level of motivation and willingness to implement change. It is important to choose suitable HWT that is user-friendly and effective and for there to be a shared understanding that digital tools are just instruments, and the changed way of doing things is the key factor. Trust is a foundation of any change management process, and it requires managers and staff to believe that the change is beneficial and worthwhile and to have capacity and support for the implementation process. Having a trial-and-error approach allowing the implementation process to be viewed as a learning process can establish a climate that favours some risk taking and flexibility. This might have a positive influence on staff and their performance in the change process, since it signals that it is safe to make mistakes during the process [53]. If the organisation does not have a high level of change commitment, staff may not be willing to invest the time, resources and effort required to implement the change effectively.

Another perspective that can be applied in trying to understand the results is that of the ecologic system theory [43,44,54,55]. For example, the theme *trust in the ongoing change and enabling the learning process* can be elaborated using an ecologic systemic theory perspective by applying micro-, meso- exo-, macro- and chrono levels.

Ecological system theory in HWT implementation

Applying an ecological systems theory perspective, based on Bronfenbrenner's [43] description of the systems, to the theme of *trust in the ongoing change and enabling the learning process* can provide valuable insights into the complex interactions and influences at play within an organisation during change management. Bronfenbrenner's [43] ecological systems theory emphasises the interconnectedness of individuals and their environments and can be adapted to understanding the dynamics of trust building, learning and change within an organisation.

At the micro-system level, the level represents the immediate environment in which an individual operates. In the context of change management, this could include individual employees and teams and their direct interactions with each other. Trust is cultivated at this level through consistent and transparent communication. Leaders who actively listen, involve employees in decision-making and provide support contribute to building trust. "First-level" leaders are close and provide direct services to employees, which is of particular importance to and critical in implementations and organisational effectiveness [56]. Encouraging a learning process involves creating a safe space for experimentation, where employees are allowed to learn from mistakes and adapt. For example, team members might engage in collaborative problem solving, reflecting the principles of self-learning and trial and error.

The meso-system encompasses interactions between different microsystems. In the study context (and the theme that is used as an example), this could refer to the interactions between the various teams, departments and stakeholders involved in the change process. Trust can be nurtured by facilitating cross-functional collaboration and shared learning experiences. Open communication channels between different teams can help prevent misunderstandings and ensure a cohesive approach to change. A consistent organisational strategy and vision ensures that everyone is aligned, promoting a sense of trust and unity [57].

The exo-system includes external influences that indirectly impact the individual and their immediate environment. This level could incorporate societal changes, such as the effects of the pandemic, and broader industry trends that influence the organisation's direction. Adapting a learning process in this context means staying attuned to external factors, embracing adaptability and aligning the change strategy with larger societal expectations [58]. By acknowledging the external forces at play, the organisation can demonstrate its responsiveness and commitment to the broader ecosystem.

The macro-system encompasses the cultural, social, and political factors that influence an organisation's overall context. In the context of change management, societal expectations and values related to the change should be considered [25]. Trust is reinforced when the organisation demonstrates an awareness of these larger issues and aligns its change efforts with societal goals. Engaging with the broader societal narrative and involving relevant stakeholders can foster a sense of trust and purpose.

The chrono-system considers the impact of time on development and change. Change management requires patience and a long-term perspective and acknowledging that change takes time and allowing for a gradual learning process reinforces trust. Over time, as the organisation adapts and evolves, trust deepens through consistent actions, open communication and a commitment to continuous learning. Egeland et al. [59] found that leaders who worked on focusing on the methods and tools being implemented and who recognised the staff's achievements influenced the latter's perception of being recognised for their achievements.

This is likely to increase motivation to continue using the innovation.

Applying an ecological systems theory perspective [43,44,54] helps highlight the multidimensional nature of trust building and change management. It emphasises the interconnectedness of various factors, such as the importance of considering external influences and the need for a patient and adaptable approach over time. By recognising and addressing these various levels of influence, organisations can enhance their change management strategies and create a more resilient and effective process.

Positive attitudes and an understanding of the ongoing digital transformation are paramount. The recognition of digital technology's role in both personal life and culture, coupled with a willingness to explore and adopt new approaches, fosters a receptive mindset. This attitude can help minimise resistance and fear, allowing for smoother transitions and a culture of digital literacy. Encouraging positive expectations and a commitment to digital transformation generates a momentum that supports the shift.

Changes in work practices and caregiving supported by HWT pose multifaceted challenges. Adapting to digital, dynamic, and remote work requires a significant shift, underlining the necessity for committed leadership and workforce flexibility. However, challenges also encompass resource allocation, infrastructure development and addressing age-related concerns among staff members. Overcoming these hurdles demands careful planning, clear communication, and tailored strategies for workforce engagement.

Leadership emerges as a central pillar in change management. Committed leadership that evolves collaboratively and supports staff through change is crucial. Establishing trust in staff capabilities and anchoring change from the top down reinforces alignment and commitment across the organisation. Effective communication, collaborative efforts and sufficient resources are indispensable for managing change successfully.

Collaboration and teamwork prove pivotal in achieving positive outcomes. Trust among the parties involved, a shared vision and emphasis on continual growth form the bedrock for successful collaboration. Effective management, IT support and feedback mechanisms facilitate progress. Notably, a harmonious work environment that encourages experimentation, learning and communication is essential for cultivating a culture of achievement.

Trust and commitment to ongoing learning are the cornerstones of successful change management. Establishing trust among stakeholders paves the way for open communication and collaboration. Acknowledging that change takes time and incorporating a learning-by-doing approach enables meaningful progress. The role of leadership in nurturing a culture of trust, providing training opportunities and aligning with societal expectations play a pivotal role in sustaining change.

Addressing the challenges of adapting to HWT necessitates a comprehensive approach, including tailored training, robust support systems, strategic user engagement, feedback integration, and fostering open communication, ultimately ensuring technology serves the user's needs effectively.

Methodological considerations

In reflecting on the critical success factors identified by Scaccia et al. [42] and the theoretical foundations laid by Weiner [14] and Bronfenbrenner [43], it becomes imperative to consider the nuanced interplay of cognitive and emotional demands on users within the organisational readiness framework. The identification

of these demands enriches our understanding of the prerequisites for effective change management and HWT implementation. However, a notable gap in our study is the absence of direct input from HWT users themselves, primarily older populations. This omission potentially narrows our insights into the full spectrum of user experiences and needs, somewhat limiting the robustness of our conclusions. Addressing this, future research should aim to directly incorporate user perspectives to provide a more comprehensive view of HWT's impact. This approach not only aligns with Weiner's emphasis on collective efficacy and commitment but also resonates with Bronfenbrenner's ecological system theory, advocating for a holistic understanding of change that encompasses both organisational and individual user contexts. Consequently, enriching our analysis with user-driven data will not only strengthen our thematic insights but also enhance the practical applicability and effectiveness of HWT implementations in real-world settings.

Considering the recruitment of informants, the authors did not have any hand in or control over the interviewees, which is a weakness since we had limited information about them and how they were recruited. According to the VOPD project leaders, they were selected based on their experiences and representation of Nordic sparsely populated areas that have successfully implemented HWT. We also have demographic data regarding their gender, professions, and experiences in leadership and management, although these details have not been included in the thematic analysis.

Although this inductive thematic analysis with a reflexive approach has gained valuable insights into leaders' experiences of successfully implementing HWT, the study has certain limitations that should be considered when interpreting its findings, and the following weaknesses have been identified. Due to the methodology chosen [37], the study has a limited content of interpretation, and while the reflexive approach is valuable in minimising researcher bias, it might have limited the depth of interpretation. Since the analysis primarily relied on participants' explicit statements, subtle underlying meanings or contexts could have been missed. There was also subjectivity in theme identification, and despite the systematic process, the identification and definition of themes could have been influenced by the researcher's perspective. Different analysts might have identified slightly different themes or interpreted them in different ways. This was, however, handled through discussions between the two authors until consensus had been reached. Since the study solely relied on interview data for theme generation and validation, there is a lack of triangulation, and incorporating multiple data sources (triangulation), such as observations or documents, could have enhanced the robustness of the findings. Since the study focused exclusively on participants' explicit statements, we might have missed underlying assumptions, emotions, or experiences that they might not have explicitly mentioned. The study's findings are limited by the characteristics of the participants chosen for interviews, and since the interviews were conducted as part of another project, the authors did not control this. We do not know if the participants were selected based on specific criteria other than that they represented sparsely populated Nordic areas/regions and had successfully implemented HWT. The results could be skewed towards certain perspectives or experiences. Finally, the findings might have limited applicability to other contexts due to the study's focus on sparsely populated Nordic areas. The transferability of the findings to more densely populated or urban settings is uncertain.

On the other hand, the study has some strengths. It employed a qualitative research design, allowing for a deep exploration of

the participants' experiences and perspectives regarding the implementation of HWT in sparsely populated areas. This approach is particularly suitable for understanding complex, context-specific phenomena. By strictly adhering to a reflexive approach and focusing solely on participants' statements without imposing preconceived notions, the study minimised researcher bias and enhanced the credibility of its findings. This approach maintained the integrity of the participants' voices and experiences. Furthermore, the study strictly followed the systematic six-phase approach recommended by Braun and Clarke [36–38] for its thematic analysis. This methodological rigour ensured a clear and organised process of coding, identifying themes and validating their relevance within the data. And finally, the study provides a clear outline of the analytical process, including familiarisation with the data, generating initial codes, identifying themes, defining, and naming themes and producing a report. This transparency enhances the study's reproducibility and allows other researchers to evaluate the analytical process.

As discussed above, the study demonstrates several strengths in terms of credibility, transferability, dependability, and confirmability through its reflexive thematic analysis approach, yet there are also opportunities for improvement in each of these aspects. Addressing these considerations provides the reader with information to assess the study's overall quality and the trustworthiness of its findings.

Conclusion

This reflexive thematic analysis has revealed several key themes that are integral to understanding the challenges and opportunities presented by the ongoing digital transformation. These themes encompass various aspects of embracing change, organisational dynamics, leadership, collaboration, and learning. The insights derived from these themes offer valuable guidance in navigating the complex landscape of digital transformation.

All the managers were considered to have achieved the successful implementation of HWT within their respective workplaces. Based on the experiences and thoughts, values, strategies and approaches they highlighted, the findings suggest that they were strong in change commitment and change efficacy and that they actively worked to facilitate readiness among staff.

The findings underscore the significance of embracing positive attitudes, effective leadership, collaboration, and continuous learning in navigating the ongoing digital transformation. By acknowledging the challenges, leveraging opportunities, being closely involved in the implementation process, and facilitating change as well as fostering a culture of trust and adaptability, organisations can position themselves for successful change management and meaningful progress in the digital era. This article uses organisational readiness to interpret the informants' cognitive and emotional readiness and experiences of contextual factors that are needed to incorporate HWT in daily praxis. The focus was on implementation effectiveness, which differs from innovation effectiveness. Moreover, the article posits that having greater organisational readiness and leaders who display implementation leadership behaviours may result in more effective implementation. Weiner's [14] theory of organisational readiness and Bronfenbrenner's [43] ecological system theory [43,44] offer a deeper understanding and theories to lean on when planning and conducting the implementation of HWT.

However, due to the study's reliance on a small sample size, further research involving a larger cohort is necessary to validate and ensure the reliability of our findings.

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Author contributions

Study design (CG), data collection (Nordic Welfare Centre), analysis (CG and PD), discussion and conclusions (CG, PD) and manuscript preparation (CG and PD).

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