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Technology Introduction in the Health Sector Through Learning and Innovation-Oriented Work Processes

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Abstract

Due to rising expectations and, at the same time, increasingly scarce resources, the health care system is also forced to constantly work on its efficiency. One possible solution is the introduction of innovative welfare technologies, but this requires the adaptation of work processes. The aim of this paper is to analyze the role of knowledge management (KM) mechanisms for learning and innovation in work processes of health organizations that increasingly use welfare technologies. The study extends existing knowledge on relevant KM mechanisms for learning and innovation in the work processes of healthcare organizations using welfare technologies. Five different KM mechanisms are suggested and discussed.

Keywords: Learning, Knowledge Management, KM Mechanisms, Home Care, Innovation, Welfare Technology, Healthcare.

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1 Introduction

Due to rising expectations and even scarcer resources, public institutions, such as health care, are forced to work on efficiency and services for citizens (de Beer & Keune, 2022; Ferry & Eckersley, 2022). Demographic changes, such as people getting older, are challenging the societal services provided by public organizations, (Lindberg, et al., 2017). Against the background of the importance of a well-functioning health system, there is a continued need for innovation to find ways to better meet the different healthcare challenges (Bessant, et al., 2019; Catton, 2020). The increased use of digital tools and technologies, such as welfare technology, could be a way to address these challenges. At the same time, it would also drastically transform the work in public health. The consequences are not to be underestimated especially since many of these tools and technologies are not very well developed (Pellegrini, et al., 2020; Santoro, et al., 2018; Svensson, et al., 2021). Hence, innovations connected to the use of technology, together with innovations in related working processes, are needed. Considering that emerging digital technologies are profoundly changing how healthcare processes are managed because of the distinctive characteristics of the technology (Hedayati & Schniederjans, 2022), it also implies that one should reconsider how people learn, create, codify, and share knowledge, and how they make

decisions (Brown & Duguid, 2000). This would require a focus on both knowledge management (KM) (Durst, et al., 2018), learning and innovation (Mazzucato & Kattel, 2020), as means to enable the transformation of working practices where welfare technologies and tools are to be used (Kraus, et al., 2021). There is little research on innovation in using digital technologies in public health sector organizations, and how such initiatives are designed to contribute to KM (Pedersen, 2020).

Research within innovation in healthcare has mainly been conducted in the private sector, especially within the industrial sector, and in some cases even at the expense of research in the public sector (Alves, 2013; Demircioglu & Audretsch, 2019). However, there is a growing interest in understanding innovation and its contribution to improving efficiency and the quality of the services provided in the public sector, and more studies are requested (Forsman & Svensson, 2023; Godfrey, et al., 2023; Serrano Cardenas, et al., 2019; Williams, 2011). Pacifico Silva et al. (2018), for example, have proposed an integrative policy-oriented framework for responsible innovation in healthcare. However, there are calls that stress the need for more studies that emphasis the innovation challenges in public health sector organizations that have started implementing new digital technologies and tools (Cinar, et al., 2019; Weintraub & McKee, 2019).

It is common to understand that knowledge and learning are essential for innovation, but despite that, innovation, KM, and learning have been established as separate fields and distinct research areas (Xu, et al., 2010; Girniene, 2013). Yet, there are studies that show how different elements of learning and KM influence innovation, and also their impact on how individuals learn, as well as acquire, use, and share knowledge (Elmorshidy, 2018). Loon (2019), for instance, identifies different KM mechanisms that are essential to explain organizational aspects in practice. The intention of the mechanisms is to make KM a driver of organizational performance, and in the case of public organizations the efficiency in service provision. Although, such mechanisms can help to increase understanding of how to improve innovation in the public sector to be ready for the digital transformation, there are still gaps in the literature on the understanding of innovation processes in public organizations, in both theory and practice (Moussa, et al., 2018; Serrano Cardenas, et al., 2019). The most frequently mentioned barriers to innovation in the public sector are related to the organization and management approaches used. A lack of interaction and cooperation are further obstacles (Cinar, et al., 2019).

Further research into the importance of KM for innovation is also encouraged, from practical as well as theoretical perspectives, and with both qualitative and quantitative approaches (Elmorshidy, 2018). Consequently, the aim of this paper is to analyze the role of KM mechanisms for learning and innovation in work processes of health organizations that increasingly use welfare technologies.

2 Theoretical background

In this section, the relevant concepts of the paper and its linkages are briefly outlined.

2.1 Knowledge management

The importance of knowledge for all types of organizations is well known (Mårtensson, 2000; Durst, et al., 2023). With the exception of typical sectors, such as the military, the public sector still has some catching up to do when it comes to KM (Durst, et al., 2018; Hammoda & Durst, 2022). KM refers to the "processes within and across organizations, such as knowledge creation, knowledge transfer and knowledge retention, which can accumulate knowledge uninterruptedly for individuals and organizations, strengthen organizational wisdom capital, and adapt to changes in the external environment" (Irawan & Mudrifah, 2022, p.25). It also contains the development and

maintenance of a suitable organizational culture, including social mechanisms related to employees and groups (Pellegrini, et al., 2020), and a focus on continued learning, as well as the existence and use of technologies to support an organization's sustainable development (O'Dell, et al., 2003; Singh, et al., 2019; Durst & Zieba 2020). "Knowledge management (KM) consists of the organizational routines and practices related to "handling" knowledge from its creation or external acquisition to its internal utilization and integration across the organizational system" (Pellegrini, et al., 2020, p. 1445). According to Rubenstein-Montano et al. (2001), "knowledge management can be a powerful tool for addressing the 'graying of government' " (p. 223).

The classification of knowledge into tacit and explicit knowledge (Polanyi, 2009) is often pinpointed in literature. According to Grant (1996), the specific nature of the two types of knowledge has an influence on the success of the knowledge transfer process and is therefore particularly useful when discussing knowledge sharing. At the same time, the scattered nature of knowledge and complexity when facilitating for an organizational culture that fosters knowledge sharing and other KM processes makes democratic and participative leadership decisive (Sousa, et al., 2020). Hence, it is important that individuals involved in KM processes are properly led, engaged, and motivated to enable KM achievements in organizations (Bavik, et al., 2018).

2.2 Learning

Continued learning forms an integral part of KM in organizations. Organizational learning can be defined as a process of identifying and correction of errors (Argyris, 1999). Consequently, there is a belief that organizations learn from experience and try to shape their actions to avoid repeating mistakes. It is well established that organizations learn from knowledge coming from inside and outside the organization (March, 1991). The systematic provision of challenges can promote learning or the creation of new knowledge (Ueki, et al., 2011). Garvin (1993) adds that learning organizations have the ability to create new knowledge by experimenting, learning from experience, solving problems, as well as sharing knowledge. The degree of learning in an organization has also been associated with the quality of the people's dialogues, commitment, and engagement (Jaiswal & Raychaudhuri, 2021; Key & Lewis, 2018; Samuelson, et al., 2022). In times of staff shortage there is a need for the management to pay more attention to cultivate effective measures to retain the valuable knowledge residing in staff members (Shujahat, et al., 2021); which is another close connection between KM and learning. Latest developments, especially triggered by the field of IT, have also underlined the need for unlearning (Durst, et al., 2020), described by Hedberg (1981, p.3) as "knowledge grows, and simultaneously it becomes obsolete as reality changes. Understanding involves both learning new knowledge and discarding obsolete and misleading knowledge. The discarding activity – unlearning – is as important a part of understanding as is adding new knowledge." Unlearning old knowledge, practices and routines can thus be seen as the key to success. It is even argued that an unwillingness or inability to unlearn old knowledge can hamper creativity and innovation in organizations (Becker, et al., 2006). Consequently, a close relationship between unlearning and innovation can also be identified (Cegarra-Navarro, et al., 2016). Moreover, Ben Zammel and Najar (2022) claim that an organization is more innovative when it effectively shares knowledge which in turn supports collective learning.

Staff in the public healthcare sector, like all other staff, are required to permanently learn new skills to be prepared for new developments. As for the use of new welfare technologies, they need to learn how to effectively use welfare technologies, such as for example surveillance cameras (Emilsson, et al., 2023), asthma management systems (Schoultz, et al., 2022), and videoconferencing (Hedqvist, et al., 2022) in their daily operations.

2.3 Innovation

Innovation can be defined as a process of turning ideas into useful – and used – new products, processes, and services (Bessant & Tidd, 2007). This illustrates that innovation can be viewed as both a process and a product (Jalonen, 2012). Regarding the importance of innovation, Cavusgil et al. (2003) emphasize that it is the basis for the survival of an organization. These authors further argue that an organization "with high innovation capability employs a learning-by-doing effect, which makes it very difficult" to get this capability elsewhere (Cavusgil, et al., 2003, p.10). Recent developments call for the need for a new agenda that systematically spreads innovation across different levels of the public sector (Torfing, 2013). Collaborative innovation is viewed as an important concept in this regard as multi-actor collaboration can contribute to and enhance public sector innovation (Crosby, et al., 2017).

The availability of new and relevant knowledge and its systematic use is crucial for innovation in organizations (Darroch, 2005); it helps them keep pace in a dynamic and increasingly uncertain environment (Allard, 2003). The relationship between KM and innovation in organizations has been the subject of numerous studies and most of them indicate that knowledge creation (or learning) is a significant predictor of innovation (Nonaka & Takeuchi, 1995; Sankowska, 2013). Knowledge is a strategic resource for innovation.

The processes of knowledge creation, knowledge transfer, and knowledge utilization are in particular linked to innovative behavior (Shujahat et al., 2019). This is also emphasized by Kianto et al. (2016) who show that successful innovation management can significantly improve innovation performance by stimulating knowledge sharing, knowledge creation and knowledge application among employees. (Cinar et al., 2019) however, noticed that there are gaps regarding knowledge sharing and communication as well as the involvement of and accountability from related actors to improve innovative behavior in the public sector.

2.4 Knowledge and learning for innovation

Healthcare is a knowledge driven process and KM should therefore be given special attention in this public sector (Shahmoradi, et al., 2017). Three mechanisms for KM practices have been identified by Loon (2019): (1) learning and knowledge creation culture; (2) organizational knowledge architecture for adaptive capacity; and (3) "business model" for knowledge capitalization and value capture. *Learning and knowledge creation* culture is based on culture theories. Learning is seen as a set of values among a group of professionals, shaped by organizational structures. The common set of values underpins their behavior in creating knowledge. A shared value implies policies and operating practices to enhance the success of an organization while advancing the economic and social conditions in the communities in which it operates (Kramer & Porter, 2011). This mechanism influences the importance placed on both formal and informal learning in the organization, and includes reward schemes, learning programs and other formalized KM specific roles and operations strengthening the learning culture. The *organizational knowledge architecture for adaptive capacity* constitutes the design of organizational systems, technologies, practices, knowledge, skills, and behaviors, that for example facilitate learning. This mechanism shapes the dynamic capabilities that enable the organization to integrate, build, and reconfigure internal knowledge and competences, as well as integrate the technology in the daily practice, to address, or to bring about, changes and innovations (Teece, 2018). Appropriate and relevant structures, technologies, and processes have to be developed to allow knowledge to be stored, transformed, and adapted to facilitate the performance of the organization. The *business model for knowledge capitalization and value capture* describes how an organization benefits from its KM practice. This mechanism is directing how new knowledge is embedded in the organization's value proposition, as

the organization has to be aware of how newly created knowledge will be characterized as useful and appropriate for its outcomes and defined goals. According to Pacifico Silva et al. (2018) such a business strategy provides an appropriate response to contemporary challenges of health systems, in providing more value to users and to society. Bessant et al. (2019) also emphasize the need to adapt and adjust business models, to better fit the emerging context in healthcare and to meet the needs of diverse stakeholders.

In conclusion, KM is central to supporting learning for innovation in public sector organizations (Ferguson, et al., 2013). This learning is embedded in everyday practice and experience, where knowledge is created, shared, and integrated and can therefore contribute to innovation in public sector organizations (Gherardi, 2009a; Gherardi, 2009b; Corradi, et al., 2010; Svensson, et al., 2023).

3 Research method

This paper is based on a longitudinal study taking a qualitative research approach. The choice of the qualitative approach was motivated by the aim to further understand people's views and experiences on how KM influence learning and innovativeness in public healthcare organizations, as qualitative research embodies "a view of social reality as a constantly shifting emergent property of individuals' creation" (Bryman, 2016, p. 33).

3.1 Research context

This study formed part of an "Interreg Sweden-Norway" project conducted in municipal healthcare services on both sides of the border, including academic institutions, municipalities, and businesses. This Interreg project focused on the exchange of experience and knowledge on the topic of organizing for and the implementation of welfare technology in public organizations. The project included perspectives from both public sector organizations, such as municipalities, people from businesses and from academia.

The involved municipalities had similar challenges related to infrastructure and work- and health-related issues. They were recruited through existing networks between university colleges, universities, and municipalities. Established contacts in the healthcare services supported in the selection of participants for study. Bryman (2016, p. 509) describes key informant recruitment as entailing "stakeholder organizations actively assisting in the recruitment of participants".

As the transformation and digitalization of future healthcare services involve and require a wide range of processes and stakeholders, we made sure that the participants also reflected this situation (more information about the participants is provided in the following section).

3.2 Data collection and selection of participants

The data were collected through focus group interviews. This method was considered an appropriate method for data collection in order to "develop an understanding about why people feel the way they do" (Bryman, 2016, p. 502). A total of six focus group interviews were conducted in two different phases, one year apart, with three groups in each phase. Two researchers from the research team acted as moderators and interviewers in each group. One of the researchers was active, while the other one listened and followed up on points if needed. The researchers made sure that participants interacted and discussed their views, experiences, and expectations. This was considered relevant for gaining rich data.

The selection of participants was based on strategic aspects. i.e., persons who were development leaders with or without a managerial position representing home care in municipalities and businesses

in Sweden and Norway were invited. They were asked to participate in the study at two conference occasions. The conferences were also part of the Interreg project.

The data collection was carried out in September 2018 and September 2019. Three to seven participated in each group. After receiving both written and verbal information about the study, voluntary participation, the possibility of withdrawing from the study at any time, the plan for the use and processing of data, the participants signed a consent form for their participation.

Thirty-one people participated in total. In the first round, ten middle managers, eight employees and one participant from a small business were divided into three groups. The participants were distributed to create heterogeneous groups, based on nationality, position in the organizational hierarchy and professional background. The middle managers had backgrounds as nurses, organizational developers, and social educators. The participating employees worked as nurses, social educators, occupational therapists, physiotherapists and in the municipal IT department.

Among the 15 participants in the second round, there were eight middle managers, five employees and two people from small businesses. The professional backgrounds among the middle managers were similar to the first round, as were the professions of the employees. Participants from small businesses were included in both rounds since they represent relevant stakeholders for the municipal healthcare services. To conduct the focus group interviews, a semi-structured interview guide was used. According to Bryman (2016, p. 466), open-ended qualitative interviews emphasize the participants' perspective as opposed to a quantitative approach where interviews are standardized with clearly specified research questions enabling "reliability and validity of measurement of key concepts. . . ". Participants were encouraged to collectively reflect upon and discuss specific themes presented by the researchers. The overall themes organizing the questions posed were; *challenges when introducing technology*, *experiences with change work and developing new ways of working* and *identification of needs for learning and knowledge related to innovation work with welfare technology*. The group interviews lasted between 50 to 90 minutes, were recorded, and then transcribed verbatim.

3.3 Analysis method

A conventional inductive content analysis was performed following Graneheim and Lundman (2004). The analysis was carried out by a group of researchers individually reading the transcribed interviews from both the first and the second session of data collection in their entirety to gain an understanding of the content based on the purpose. The text was then classified into meaningful units that were condensed and coded on the manifest level. The codes were then brought together and abstracted at the latent level into sub-themes. As the last step in the latent level, the analysis from all six focus group interviews resulted in six themes: 1) Structure as support for the work processes, 2) Knowledge acquisition, 3) Bridging of institutional barriers, 4) Collaboration between organizations and professions, 5) Collaboration between hierarchical levels, and 6) Development based on users' needs.

The study was carried out in accordance with the ethical principles of the Helsingsfors declaration (WMA, 2013) and was approved by the Swedish Ethics Review Authority (Dnr 932-18) and the Norwegian Centre for Research Data (NSD/SIKT).

4 Findings

In the following the findings will be presented in accordance with the six themes emerged from the analysis..

4.1 Structure as support for the work processes

Creating personalized care plans for home care demands time and attention, yet their full potential often remains untapped due to limited engagement. Digital work plans on smartphones serve as essential guides, acting as dynamic hubs for evolving strategies and knowledge management. Despite the advantages of digitalization, the challenge lies in the time needed for both creating and absorbing these plans. Morning reminders act as a crucial prompt, unlocking a wealth of knowledge within these digital platforms. As home care evolves, real-time documentation of plan changes becomes crucial for maintaining efficiency. In this era of innovation and knowledge enhancement, the proactive adoption of digital work plans empowers home care staff, transforming routine tasks into opportunities for continuous learning and optimized care practices.

> "*It is a wish, precisely that with the care plan and see how to do things, not just that they should do it.*" (assistant nurse, working with administration and planning)

However, the issue persists that not much time is spent reading these plans.

> "*The plans are not read today and since they are not, they are not filled in correctly either.*" (unit manager for a home care residence)

Establishing a structured framework in home care is integral for effective management, promoting clarity regarding staff roles and their service users. This framework could enable regular updates and adaptability to changes. Organizational transformation signifies a shift in working methods, demanding clear governance and decisive leadership. The innovative journey in home care involves active participation of staff in developing and implementing welfare technology to enhance efficiency and satisfaction. Their daily interactions with service users underscore the significance of their involvement.

> "*The employees must find it fun and above all be able to influence and come up with suggestions.*" (business leader)

> "*That you really have the staff with you in the process, I think is extremely important, because otherwise it just becomes something that dims down from above.*" (unit manager for a home care residence)

Integrating welfare technology should align seamlessly with change management and the practical aspects of home care work, fostering an innovative culture. The perceived complexity in implementing multifunctional welfare technology highlights an adaptive and progressive approach. Sustaining staff morale involves engaging them in refining and adapting working methods, fostering a culture of continuous improvement.

> "*All employees, both managers and whoever who are working, should be able to make suggestions and come up with new solutions.*" (development leader)

Despite successful pilot studies, widespread implementation may encounter challenges, highlighting the pivotal role of ongoing staff involvement in innovation. Empowering home care staff to influence decisions is paramount, with strong management support serving as a catalyst for innovation. Facilitating a continuous dialogue between home care staff and managers creates a knowledge-sharing environment, allowing for the resolution of everyday technology-related challenges.

> "*I'm thinking about this, how important it is to bring representatives from all businesses and that you work together in a dialogue, to spread innovative thinking.*"(administrator)

4.2 Knowledge acquisition

Home care staff often harbor apprehensions about technology, finding even simple tasks like changing passwords challenging. Knowledge and preparation for new technology are crucial to alleviating these concerns. Despite occasional technological challenges causing insecurity, the belief persists that technology can enhance and streamline work. Initially, there is resistance to new technology among home care staff, but positivity emerges when they witness improvements in efficiency. Hands-on experience is key; the fear diminishes faster if the technology is user-friendly. Informing and involving staff in practical learning is vital to prevent negative attitudes from spreading. The transformation proves demanding, considering the organization's unfamiliarity with changing work practices. Home care organizations tend to underestimate their digital maturity delay, lacking essential skills support and necessary technology. Addressing these gaps in knowledge is imperative for successful transformation.

> "*I myself have worked a bit in healthcare and there I know that the systems used in homes are quite complex, I think it's a bit surprising that everything needs to be so complicated, and I think that creates greater resistance, and it kind of creates distance from the whole thing of the technological part.*" (CPO from a company).

Home care staff currently lack awareness of available technologies. Introducing specialized IT business developers is essential, along with training regular healthcare staff to become IT ambassadors. Without a system of superusers or support mechanisms for technology challenges, frustration can erode staff motivation. Leadership plays a crucial role in changing processes, requiring skills to foster ownership and effectively communicate the benefits of new technology. Providing sufficient time for explanation and addressing questions is essential to ensure a comprehensive understanding among all employees. Home care staff's interest and willingness to adopt technology increase when they grasp its benefits and understand how it works. There is a disconnect between what users need and what technology is available, highlighting the need for a holistic approach to introducing digital technology and new working methods. Building competence involves helping staff understand the reasons behind incorporating technology in home care.

> "*If you don't have competence, resistance arises, but you can use resistance as a creation, it is a method, i.e. you use resistance to something that is created instead of it being destructive, such processes need to be used with staff groups to involve them so that a positive force arises instead.*" (leader of welfare technology implementation)

Promoting innovation and knowledge management in home care involves introducing training projects that provide opportunities for staff to test new technologies. Integrating technology development into the education of home care staff is essential. Specific training tailored for home care staff and nurses should address their needs, with input from practical experience. Adapting training to different groups is crucial. Shifting the focus from technology implementation to changing working methods is important. Embracing an open-minded approach, staff should recognize that not everything is fully developed. Competence in daily work is essential, and staff must be encouraged to test and learn as part of their ongoing development.

> "*It costs a lot of training but, I still think it pays off, we shorten time and getting people on board, I think so, because if people don't understand then people don't do it, then they don't use the new technology or whatever it is and then do as you have always done.*" (development leader)

4.3 Bridging of institutional barriers

Within home care organizations, there is an ongoing challenge to fully align services with the individual needs of users. The introduction of new welfare technology in this context necessitates the adoption of an innovative procurement approach. However, this transition is not without its hurdles. In the realm of innovation procurement, suppliers often find themselves in unfamiliar territory or harbor skepticism about this methodology. Paradoxically, it is these suppliers who frequently take the lead in driving the development of welfare technology. This dual role adds complexity to the adoption of innovation procurement, posing potential challenges.

> "*It is possible to be innovative, but I think in general the approach to suppliers is that they are expert in this. Instead of just taking a "No, but I have thought that" or "Would you be able to solve this sort of work with it then¿'. But I mean that question, I don't think I had asked it before. You should have some demands on the supplier, it is possible for them to develop,... based on that we have a need, and so I don't think that approach is... I still think that I have changed a little after this day anyway.*" (unit manager for a home care residence)

Engaging suppliers in the innovative procurement process can be particularly demanding for smaller municipalities. These entities may not be well-versed in this approach, leading to concerns about its resource-intensive nature. Moreover, companies, eager to showcase their cutting-edge technologies, often introduce a variety of fancy and innovative solutions, further contributing to the intricacy of the decision-making process. A notable concern arises from perceptions that innovation procurement methods may challenge existing procurement laws, adding an additional layer of apprehension for municipalities. In navigating these challenges, a nuanced understanding of the interplay between innovative procurement practices and the unique dynamics of home care organizations is paramount. By fostering this understanding, stakeholders can pave the way for the successful integration of welfare technology, ultimately benefiting both service users and the organizations themselves.

> "*I experience when we have innovation processes like this with welfare technology in the municipalities that many are afraid, as the municipalities are terrified of, and like "Yes, but how are we going to handle this", it's so unclear and you may not have the right skills in your municipality either and, and need to get support.*" (development leader)

4.4 Collaboration between organizations and professions

Innovation in home care thrives through collaboration across boundaries. Exploring shared services, like combining roles such as assistant nurses and firefighters, offers opportunities. While a complete shift to IT-focused roles may be challenging, adapting working methods from other domains remains beneficial. Streamlined responsibilities in smaller municipalities facilitate easier decision-making and the implementation of welfare technology. To enhance innovation, administrations should collaborate with academia, businesses, and other organizations. Partnering with students for solutions is valuable. Cross-boundary collaboration within and between organizations is crucial.

> "*Also, this that we do today, i.e. that you look beyond your borders to actually take help from each other, collaboration.*" (unit manager for a home care residence)

Challenges may arise from insufficient cooperation between administrations during the introduction of welfare technology. Balancing responsibilities and regulations in collaborations between

different organizations is key. Support and collaboration within municipalities, as well as across borders, are essential, especially during processes like innovation procurement. Recognizing diverse perspectives among service users, their relatives, and employees is vital when determining preferred technology and its usage.

> "I'm trying to get an overview of this here right now. But I think it is important to have these types of resource groups from different areas, and one thing that I think has been very good, when you have not necessarily had all the support in place from the management level, it has also been very good to involve users in this at an early stage." (development leader)

Fostering dialogues with suppliers and businesses is crucial, though cooperation with small local companies can be challenging due to their size. Creating forums to showcase transformative excellence through welfare technology implementation is essential. Municipalities seek innovative approaches to involve those affected, tapping into their valuable insights for operational improvement. Collaboration across professions is vital as diverse skills are required to identify and solve problems in the changing landscape of welfare technology. Beyond organizational boundaries, mutual support and cooperation are essential for learning and generating new knowledge.

> "*It is anchoring, competence, knowledge, understanding and what we have done is a project that is ongoing now and there we have worked with collective learning or training the trainer. They have got in-depth knowledge and then they train their colleagues at home, and it has been very fortunate.*"(unit manager for a home care residence)

> "*Is there time at all to conduct a dialogue about everyday problems that could be corrected.*" (development leader)

This extends to companies developing products and services within welfare technology. Cross-professional groups, both at management and home care staff levels, contribute to a valuable exchange of ideas. Some municipalities establish quality councils with diverse professional skills and managers to ensure understandable quality procedures for staff. This extends to companies developing products and services within welfare technology. Cross-professional groups, both at management and home care staff levels, contribute to a valuable exchange of ideas. Some municipalities establish quality councils with diverse professional skills and managers to ensure understandable quality procedures for staff.

4.5 Collaboration between hierarchical levels

In the context of home care, there is often a noticeable gap between the staff involved in the production of home care and their managers. Those working directly with home care and service users often feel excluded from development work, while managers, situated in their offices, might become detached from the practical aspects of production. This disconnection poses a risk, as managers' understanding of home care production may decline, hindering planned implementations. Typically, decisions about implementation are made at higher levels, involving heads of staff and IT departments. However, a more hands-on approach is necessary. Managers should understand how technology integrates into daily life, support subordinates effectively, and maintain alignment with the pace of the work. Leadership plays a significant role in the transformation process, and the success of technology implementation hinges on managers' ability to bridge the gap with home care staff from the outset.

The barrier between those using technology in practice and decision-makers often leads to unnecessary obstacles. Home care staff may find it challenging to reach managers with their ideas. To foster a more effective environment, collaboration between hierarchical levels is essential, promoting a shared understanding. Managers need to anchor decisions within the organization and actively participate, ensuring the smooth implementation of welfare technology for home care staff.

> "*The leaders have a lot of administration away from the production, so they are not close to the users and the service. And there I think more of the problem lies, because the staff do not know they are not allowed to participate in development work or be involved in new thinking. I experience on a large scale that the leaders sit in their office and work in very many areas - they have so many tasks that the production gets pushed too far away.. and then I think it does something with the understanding of it, the knowledge, the interests, so there is too little time for it, and certainly if the leader does not believe in it and is interested in being involved, then you must never have it implemented in practice.*" (development leader)

4.6 Development based on users' needs

In many municipalities, a strategic plan for technology use is often absent, and home care organizations struggle to articulate the benefits of welfare technology for both staff and service users. Service users prioritize security and social inclusion, aiming to manage their lives independently. However, capturing individual user needs is challenging, as assumptions sometimes replace direct inquiries by home care staff. Early involvement of service users in the process is valuable and can be a success factor. The diverse impairments among service users necessitate technology adaptation, presenting a challenge in finding suitable solutions. New technology introduces new needs, emphasizing the importance of communication with suppliers to ensure meaningful contributions aligned with user needs.

> "*It's such a difficult question, I think that's why after every change we make that can make it easier for the individual, but you have to constantly think that it should fit exactly "Axel", exactly "Barbara or Eric", so that it's difficult. You can capture the individual needs..and you have to capture that, but I have a hard time seeing about.how to find services that works for different individual need.*" (development leader).

Convincing staff of the purpose and potential changes in their work due to technology is crucial. Managing the complexities of technology requires a careful balance between usability, avoiding overly advanced solutions, and addressing the relationship between costs and benefits. Home care staff's motivation is sensitive to the presented motives, with concerns about increased workload or reduced personnel often impacting their perception of technology adoption.

Implementing welfare technology is about creating new value in the organizations by means of innovative ways of working. Often, financial considerations take precedence, overshadowing the importance of value creation. This oversight may lead to the introduction of untested technology or attempts to solve loosely defined problems. Predicting the impact of these changes is challenging, and there is often insufficient focus on evaluating results post-implementation. To foster successful transformation, home care organizations should start by asking what technology can do for both service users and staff, addressing potential resistance. The emphasis could be on business development supported by welfare technology, rather than placing technology as the primary focus.

Implementation should be a supportive process, not overshadowing the main operational processes, preventing it from becoming an additional burden for home care organizations to manage.

5 Discussion

Formal and informal learning is important within home care organizations for making sure that the expected services can be offered as good as possible considering the narrow financial scope for action. This culture for learning would be further developed. This could also contribute to developing a growth mindset in the organizations so the KM can contribute to the work performance. In this way KM can be more integrated in work practice, to enhance the transformation of work methods when implementing welfare technology. The organizations need to appreciate and value the role of developing KM practices. This could include creating coaching programs for the home care staff, and formalizing roles for KM. This is supported by the mechanism of learning and knowledge creation culture. Learning will strengthen organizational wisdom as well as making both individuals and organization more suited to adapt to changes (Irawan & Mudrifah, 2022)

Home care organizations need to be oriented to use technology for collaboration and knowledge sharing. They also need to develop structures, techniques and processes for knowledge sharing, knowledge integration and knowledge use to enhance the transformation of work methods when implementing welfare technology. Knowledge and competence are also needed to be capable of organizing and leading processes for developing new work methods and new procedures and how to integrate welfare technology in the work, which requires learning. It is obvious that the mechanism of organizational knowledge architecture for adaptive capacity is needed. Also, according to Shujahat, et al. (2019) knowledge management processes are important and relevant irrespective of KM practice.

Home care organizations need to be aware of how knowledge is embedded in values of the staff and the managers. They need to develop a service model, which includes different service use scenarios where welfare technology is integrated. New knowledge has to be exploited and used in work practice. A balance of exploration and exploitation is needed as the work competes for limited resources. Through organization's resources and employees' skills leaders require to focus on the quality of everyday interactions and dialogues (Avby, 2022). Information about the use scenarios needs to be diffused in the home care organizations, so the whole staff is aware of those. Moreover, collaboration with external stakeholders needs to be developed in new ways, where communication and exchange of information on use scenarios is of vital importance. It is important to manage relationships with partners and to properly maintain the communication processes (Ben Zammel & Najar, 2022). As Loon (2019) proposes, these phenomena relate to the business model for knowledge capitalization. It is emphasized that knowledge-sharing practices are crucial for organizational capacity-building (Kianto, et al., 2016).

To achieve a learning and innovative home care organization, the needs should be clarified and outlined by the home care staff who are working with the service users. The home care staff needs to be deeply involved in the transformation processes when implementing welfare technology, and if they are afraid of welfare technology the implementation will fail. A key to innovation is the employees' willingness, capability, and opportunity to innovate (Avby, et al., 2019). Therefore, a mechanism for clarification of needs for innovative knowledge creation is needed in the home care organizations, where also the staff have to constantly engage in personal knowledge management practices (Shujahat, et al., 2021).

Even if all the mentioned mechanisms are in place in the home care organizations, the findings suggest that there is need for one more mechanism. This mechanism should work as an activation

of integrative leadership. If nothing is activated, almost nothing will happen in innovation and learning processes. Therefore, leadership needs to plan, activate, follow up and evaluate the innovation and learning processes in the implementation of welfare technology. Godfrey et al. (2023) also emphasizes the creation of better healthcare services, based on innovation and innovativeness, that are dependent on the organization's ability to acquire, assimilate, transform, and apply new practices. The home care organizations then need to get some feedback to see and understand what they have achieved in their innovation and learning processes.

6 Conclusions

This study highlights the role of KM mechanisms for learning and innovation in the work processes of healthcare organizations using welfare technologies. Based on a qualitative study involving different stakeholder groups from home care organizations in Sweden and Norway, this study provides new insights into what needs to be done to better prepare the organizations concerned so that the expected benefits of welfare technologies materialize. In this respect, the study also emphasizes the relevance of a strategic approach in the organizations. This strategy must clearly show that the interplay between KM, learning and innovation management is understood, and that concrete measures and tactics are proposed as a result. The study has also made it clear that progress in this area needs to be made at different levels. Employees (including managers) need to be trained and the structures and culture need to be adapted. Cooperation with the various stakeholder groups must also be reconsidered. All this against the backdrop of ever tighter budgets and an increasing shortage of healthcare professionals at all levels. On the other hand, tighter budgets can also promote innovative thinking and action. In this respect, the public sector could learn from smaller companies in the private sector, which are used to operating with few resources and still being innovative.

Like all studies, this one also has limitations. One has to highlight that the home care organizations involved in our study were located in Sweden and Norway, the characteristics found there may not be found in home care organizations located in other countries in the world. The same could apply to home care organizations located in other parts of Sweden or Norway, as the focus of this study was based on a specific border region. Thus, the presented findings cannot be generalized for home care organizations but are limited to those organizations that are similar to the ones involved in this study. A further limitation might have to do with the fact that different organizational contexts and cultures were not considered which, however, could influence the organizations' approaches and understanding of learning and innovation as well as their view of knowledge and its meaning. Consequently, there is a need for replication of this study across different cultural and organizational settings to determine whether and to what degree these settings affect the way home care organizations act when faced with fundamental changes due to the introduction of new technologies.

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