Key factors influencing the implementation success of a home telecare application

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A B S T R A C T

Rationale: The introduction of home telecare in healthcare organizations has shown mixed results in practice. The aim of this study is to arrive at a set of key factors that can be used in further implementation of video communication. We argue that key factors are mainly found in the organizational climate for home telecare implementation, the characteristics of the implementation strategy and the available technology. Methods: Interviews were conducted in three care organizations with 27 respondents of different levels within and outside the organization. Implementation determinants, based on earlier research, were used as a categorization framework for the interviews. Results: We found that most prominent factors influencing implementation outcomes relate to the stability of the technical and the external environment and the alignment of organization, goals and implementation strategy. Conclusion: Because of the experimental nature of implementing video communication, attention to telecare influencers has been inconsistent and disorganized but it is becoming increasingly important. According to the respondents, a championled roll-out is imperative for implementation in order to advance to the next stage in home telecare and to organize services for substitution of care.

1. INTRODUCTION

The aging population and the push for more efficient delivery of hospital services have fueled the increasing demand for home care services [9]. Home telecare is considered one way to answer this increasing demand by providing cost-effective care through the use of information technology. In a recent systematic review, the main benefits of home telecare were discussed [24]. Most important benefits relate to (1) reduced client hospital utilization; (2) improved client compliance with treatment plans; (3) improved client satisfaction with health services; and (4) improved quality of life. Home telecare also improved cognitive status, cognition and self-rated health status [23]. By the term home telecare, we refer to the definition of Dansky, where home telecare is described as "The transmission of digital, audio and video data during live interactive healthcare encounters between participants in different locations [8]". Home telecare is an innovation that is being considered by homecare organizations to *manage costs* and to *enable independence* for clients wanting to stay at home [24]. A number of home telecare services, for instance video communication, can be provided in order to achieve these goals. The complexity and specifically the cost-effectiveness of these kinds of implementations are the subject of a large variety of research studies [2–4,7–10,13,15,16].

In this article, we consider home telecare implementation to be a success when there is high goal performance congruence and adherence according to the health care organization implementing the technology. A variety of previous studies has discussed the determinants of implementation success of comparable healthcare innovations [3,4,6,12,14,17,20,26,27].

These studies mainly build on known innovation diffusion and innovation adoption research [11,22]. Few studies however contain empirical research data that confirm or evaluate these determinants for specific innovations in care settings like home telecare. Even fewer focus on the implementation of home telecare applications and the associated implementation strategies. The aim of our study is to *determine which factors influence the success of the implementation of video communication as a home telecare application* from an organizational perspective. Insights into these factors may aid the development of matching implementation strategies to preset goals. These strategies can be used for the further implementation of (other) home telecare applications and may contribute to the relevant body of literature in this specific domain. In this study, we focus on the implementation of one application of home telecare in The Netherlands; the use of *video communication in home care organizations*. Through the presence of a touch screen at home or through a regular TV set, clients are able to contact the homecare organization nurse via a call center to chat or ask advice concerning health problems; or they can engage in video communication with their relatives, etc.Implementation success can be seen as a crucial prerequisite in order to attain intended innovation benefits [18].

2. METHODS

2.1. An implementation evaluation framework

In order to evaluate key influencers of home telecare implementation success, we constructed an evaluation framework suitable for the evaluation of home telecare implementations. As indicated by Fleuren in her extensive literature review, five factors should be considered in evaluating healthcare implementation success in general: (1) innovation characteristics, (2) the socio-political context, (3) the characteristics of the adopting persons, (4) the characteristics of the organization and (5) the implementation strategy [14].

Together these factors facilitate or impede implementation success. We will use the above categorization as the basis for our evaluation framework for home telecare. In addition, Barlow proposed more detailed dimensions for the evaluation of home telecare success in particular, such as the availability of a local support framework and top management support [4].

In Table 1, a summary of these factors and barriers is presented as well as the integration of the two different models in domains for our research framework. We use the frame- work as a basis to classify and structure our findings and to answer our research question, relating to the determination of key influencers in the video communication domain. Central to innovation implementation is the implementation strategy; the way people are involved and when – the so-called stakeholder involvement – is part of this implementation strategy. Different goals require different approaches and strategies; each goal and strategy for implementation adherence requires its own configuration of technology, stake-holder involvement and structure [27]. As illustrated by Hailey and Crowe, the degree to which all stakeholders are involved and cooperate, and the stability of management structures are fundamental to the successful introduction of innovations [15].

2.2. A multiple case study

Since we aim to research implementation success from an organizational perspective, we analyzed a variety of different organizations with different compositions of the stakeholder environment. In The Netherlands, around 10 home care organizations are involved in video communication applications. After inviting a large sample of involved care organizations, three organizations were willing to participate in the study. The selected organizations had large differences in own perceived success of the organizations' implementation of the video communication application. One organization was one of the first to implement home telecare in The Netherlands (A); another organization that started implementing video communication systems a few years ago (B); and the third was one of the first organizations to start a home telecare implementation project but recently halted the project (C).

2.2.1. Data collection and analysis

In order to evaluate key influencers, we aimed to conduct in-depth interviews with key stakeholders involved in the implementation of video communication. We used the results of our desktop research,

including management reports of the organization in question, plus evaluation reports and articles on home telecare implementation in general that were publicly available, to develop a list of the most important stakeholders concerned with the project and to compile a semi-structured topic list for the interviews (Appendix A). Topics were based on the evaluation framework and included the initiation of the implementation project, the choice of technology and the process, strategy and organization of the implementation. We developed interview questions according to the specific function of the respondents identified. The project manager in charge of each project approved the final set of interviewees and supplied the contact details. Only one respondent of organization B and one of organization C refused to participate. Between July and December 2010, a total of 27 respondents were interviewed. These were (1) stakeholders from different levels of the organization, such as board members, managers, front-office nurses, caregivers, clients, caretakers in the assisted living home and (2) stakeholders such as technology providers, health insurers and housing associations. The domain categorization in our evaluation framework was discussed with the respondents. We did not explicitly asked respondents to agree with the barriers of Barlow, since it may influence interview results [4]. The interviews were guided by a semi-structured topic list and were recorded, literally transcribed and prepared for use in MAXQDA (www.maxqda.com). Relevant themes in the interviews were extrapolated by means of qualitative data analysis. This was done by two researchers. Interview fragments were labeled according to the detailed factors described earlier. There were only minimal statements made that did not fit one of the evaluation framework domains. All other domains were covered, as can be seen in the results section. Categorizations were compared and synthesized. Here, the above-mentioned innovation implementation determinants were used as a categorization for the interview fragments.

[TABLE 1, 2]
Finally, we discussed the results with the respective project managers by means of an evaluation report.

3. RESULTS

In Table 2, relevant general and implementation specific characteristics of the researched study sites are presented. Several specific reasons were given during the interview sessions, relating to why the organizations embarked on the project using video communication technology. These reasons included: having high expectations of video communication for contributing to a reduction in costs and improving efficiency of care delivery; improving quality of care; and seeking to establish a profile as a technology leader in the field as well as to become involved in experimentation (A). When comparing the different organizations, a difference in goal focus can be observed. While both organizations A and B focused on improving quality of care ('to facilitate clients to live at home for as long as possible') by the additional services delivered, organization C mainly focused on a reduction of care costs by means of substitution services. Not surprisingly, the most advanced homecare organization included in the study (A) was more willing to participate in the case study than the organization that halted the project (C). Not all employees approached were willing to participate in the interview sessions (n = 3) for a variety of reasons. These included unfamiliarity with the innovation or negative feedback from clients with respect to the technology or services provided.

3.1. Technological context

3.1.1. Influencer 1: stability and reliability of the technology

With regard to the technology used in our care organizations, we may conclude that at the time of the described implementation, the technology was immature in terms of software and hardware [21]. Evidently, the stability and reliability of the technology, however, is crucial in service delivery and adoption of the technology. At present however, no major problems are experienced or indicated by the organizations in respect of the technology (A and B). *". . . technical disruptions have gradually become few and far between . . ." (Project manager A)*

3.1.2. Influencer 2: experience of the technology partner

The manner in which the technology was developed, installed and provided to the clients differed between the organizations in question. Organization A collaborated with a technology partner that was new in the field. This resulted in a variety of technical difficulties during the initial phases of implementation, like

non-functioning touch screens or interface glitches: ". . . At the beginning, there was a lack of attention to user requirements and operational impact . . ." (Board of Directors, A). Organization A implemented the technology in a housing complex containing long-term care apartments. Organization B joined an already existing and successfully operating joint venture of both technology and care providers. Content groups and templates were already available. The joint venture focused on a platform-independent software solution. This saved time and effort for organization B in terms of service development. Organization B implemented the technology in clients' own homes, which meant there was no guarantee that a solid or reliable infrastructure was in place. Organization C worked in collaboration with a large telecommunications provider in The Netherlands, providing the infrastructural support. The technology was TV based and was only initiated by clients from their own home. In our interviews, it was frequently mentioned that experienced suppliers were expected to be better able to deliver reliable support and technology, leading to higher acceptance during the implementation stages for home telecare nurses and clients in particular.

3.1.3. Influencer 3: level of content–goal alignment

Furthermore, the content provided through the technology infrastructure must match the goals of the homecare organization and the home telecare services it aims to provide, as already concluded by Van Offenbeek [27].

We call this the importance of *content–goal alignment*. As stated during one of the interviews by a nurse: *". . . It took us some time to realize that it is of little use thinking in terms of illnesses or treatment characteristics in defining appropriate content. Instead, we evaluated different sets of needs independent of client characteristics and matched appropriate services that could be supplied using the video communication application. Then, we evaluated and discussed the needs with each client . . ." (Project Manager, C)*

3.2. External context

As emerged in the interviews, financing is considered a major influence in relation to home telecare. Other external influencers mentioned include the way collaboration has taken shape and the role of legislation.

3.2.1. Influencer 4: the stability of infrastructural and operational financing

By the end of 2012, it is projected that all Dutch government grants relating to the financing of services delivered by video communication in home care will cease to be provided in their existing format. This implies that organizations must find ways to fund these services themselves or find and organize partnerships to pay for the costs of the services provided. Although home telecare and specifically video communication, may lead to improved efficiency of care, the financing system which is based on hours of care provided means that home telecare may result in lower income for the care organization compared to the income from regular care. As indicated in the interviews by a financial manager of organization B: ". . . The future of our services is a blur; we really don't know what is going to happen with the funds we are currently receiving. At this stage, however, we are not able to finance it solely by ourselves . . ." (Financial Manager, B)

The stage of maturity of the technology increases the complexity of financing the investment, since considerable costs are involved during the design and implementation period, not all of which are covered by the supplier. In the future, these development costs are considered by the respondent to be less of a problem, since the technology is likely to become more cost-effective as the design of the technology matures, as also noted by Sicotte and Loane [19,25].

3.2.2. Influencer 5: the level and structure of service collaboration

Collaboration with other parties is perceived as a major factor in speeding up the implementation, especially since the effects of home telecare services like video communication, are not limited to the care provided by the homecare organization. Financial considerations are also involved: ". . . We do not receive proper reimbursement for cost reduction by preventing physician visits by clients through video communication. This is a consequence of a lack of collaboration between the different care partners involved in a client's care . . ." (Financial Manager B) All three organizations were engaged in some sort of collaborative venture with both the supplier of the technology and the housing corporations involved. Importantly, the degree of contribution to content varied amongst the different joint ventures. With respect to organization A, for example, the content was developed together with the technology supplier. Since the development of services can be somewhat haphazard, collaboration with others in content groups seems benefi-cial, from the perspective of learning from others and sharing experiences. This saved considerable

time and effort for orga- nization B. Collaborations with other care partners were only present on small scale at organizations B and C. This mainly involved the collaboration with GP's for regular teleconsultation of the home care institution clients, e.g. regarding diabetes follow-up or wound care.

3.3. User context: innovation-value fit

3.3.1. Influencer 6: the virtual–physical care alignment

Traditionally, care professionals greatly appreciate the personal contact with clients. This was identified as a source of resistance toward video communication technology in the interviews conducted. At the same time, the benefits of virtual care were better appreciated by carers operating in rural areas (institution C): ". . . Not all client contacts can be substituted with virtual assis-tance. There will always be the necessity for physical activities. At the same time, because of the technology we are now able to have more contact moments with distant clients that is highly appreci- ated and contributes to the reduction of feelings of loneliness . . ." (Nurse, A) In the interviews it was indicated that it is important to position services not as a replacement of physical care, but as an enhancement of quality of care. Instead of one actual visit, three virtual visits can take place.

3.3.2. Influencer 7: continuous assessment of the (in)direct effects of virtual service delivery on all user groups

The innovation must also fit with the clients' changing daily activities and needs or those of the primary caregivers. This fit can be established by closely, continuously involving the various stakeholders in the development of new services as part of traditional care programs. Reasons for resistance can be found in a lack of conviction that the technology can actually improve the quality of care or indeed that it could provide care services at all. It was felt that virtual service delivery must be of added value to all clients, employees and primary caregivers (e.g. partner, son or daughter) involved, and that clearly formulating and communicating these benefits enhances the success of implementation. This includes for example, family and the effects home telecare may have on their contact and involvement with the client.

3.4. Organizational climate

3.4.1. Influencer 8: the availability of a comprehensive framework for support, with sufficient top management support and a basic set of procedures

In all cases, the project seemed to be initiated by top management who believed in video communication technology and the added value of the services. The collaboration between a variety of partners at initiation, all enthusiastic about the proposed services, also facilitated the start-up of the actual project. Furthermore, during the startup and implementation top management was closely involved and affiliated with the project. The projects were prominently mentioned in strategy and policy plans. The management of the project strongly believes in the benefits of the services, although the results may only be visible after a very long period. With respect to operational protocols, these were present in all three organizations, almost directly from the start. In both organizations A and B, these operational protocols were developed from the bottom up. However, not all protocols and procedures were adhered to in practice during the use of telecare, which sometimes led to misunderstandings and impromptu decision making. With respect to organization B, where rollout was designed on a local level, this sometimes led to a difference in service provision across teams, complicating the central orchestration of the implementation.

3.5. Implementation strategy
As stated before, the implementation strategy should match the operational goals of the implementation.

3.5.1. Influencer 9: the level of involvement–goal alignment

A mismatch between goals and strategy leads to poor performance by the innovation. This implicates proper involvement of both clients and care personnel. Equally important is how services are developed and implemented: bottom-up or top-down. This can be seen in organization C, where there were high expectations of substitution care, only to be followed by disappointment from a failure to identify suitable contacts.

Within organization A, in particular, a lot of attention was devoted to meaningful communication, involving clients at multiple stages during the design phase. Organization B depended heavily on decentralized care units to introduce the technology and services: ". . . *Our care teams have the choice*

themselves to introduce and promote the service to their own clients; they are not obliged to do so . . . (Program Manager, B) Mixed effects can be observed; some teams embraced the technology, took ownership and actively sought clients to connect with, while other teams did not use or attempt to introduce the technology at all. This seems mainly due to individual champions within the different teams. There was considerable homogeneity in the way home telecare was introduced. In all three organizations the introduction of the technology started top-down. Next, the project was orchestrated centrally. Content was discussed and decided on top-down and closely discussed with both clients and nurses. The actual installation in the clients' homes differed amongst the organizations. Organization A centrally introduced both hard- and software, while organization B del-egated the 'marketing' and installation to the decentralized care teams, who knew the respective clients personally. In organization A, the content of the services was further shaped by employees themselves (bottom-up development). This differs from organization B where content was mainly decided on in the joint venture content groups. All organizations strongly focus on eliminating client concerns, *e.g.* by reimbursing electricity costs. As can be concluded from the interviews at organization B, a *decentralized* roll-out should be performed in phases, starting with enthusiastic teams and using these as showcases to convince the rest.

3.5.2. Influencer 10: orchestration of a championled roll-out

As indicated in the various interviews, the best way to over- come the resistance experienced is to continuously promote the services through enthusiastic ambassadors: *". . . Without our caretaker, the implementation would not have gone this smoothly; he knows everyone in the building and can act the minute problems occur . . ." (Project Manager, A)* Ideally, these ambassadors have the trust of the client and primary caregiver (partner, son or daughter) and are therefore of great value to care professionals in direct contact with the client. During the design stage of the technology, the clients and the technology supplier were the partners. During implementation, the key stakeholder was stated to be the one in close physical contact with the client (primary caregivers); this *championing* role appeared to be crucial in convincing the users to actually utilize the technology and in removing any reservations. These findings are interesting, since other studies of home telecare in The Netherlands showed that the care coordinators and caregivers did not automatically find it to be in their interest to stimulate the substitution of home visits by home telecare [1].

Consequently, clients did not actively use the system. We may conclude, particularly on account of the (decentralized) implementation of organization C, that the local care team's attitude can be seen as a decisive success factor during the final stages of implementation [27].

4. CONCLUSION

The aim of our research was to identify key factors that influence the implementation success of home telecare in care organizations in The Netherlands. According to the stakeholders included in our study, a number of influencers need to be taken into account when implementing home telecare services. In the opinion of the majority of participants, the success of home telecare applications and video communication in specific, is critically dependent on enthusiastic champions along the implementation trajectory, on strategic, tactical and operational levels of the organization. From a management perspective, the proper organization of the local framework for support and finding ways to ensure long term financing are found to be critical. In evaluating and interpreting the results shown, we found that a major theme underlying the indicated influencers seems to be stakeholder management as a top priority during implementation of video communication. Both internal stakeholder management; who to involve when, as well as external stakeholder management; managing partners for collaboration (both in the technology and care domain). This seems in connection with the evolution of health institutions, from being a national institute, to becoming a more commercial and competitive care partner. The results of the study show that experimentation at this stage of the development of home telecare in The Netherlands is appropriate and tends to have higher success rates than trying to substitute care, even though substitution is frequently expected (C). This echoes the conclusions of Bayer et al. who caution against overoptimistic expectations of the impact of telecare in the short term and warn that the benefits of implementation will only become fully effective with a significant delay [5].

5. DISCUSSION

One of the main strengths of our research lies in its indepth evaluation of multiple cases. This yields a reasonably thorough insight into relevant factors and processes relating to home telecare. The framework used, as a combination of existing models, proved valuable for the classification of the found influencers and the structuring of the interviews. The comparison of organizations with different implementation approaches and outcomes provided valuable insights into specific home telecare influencers. The research approach used, interviewing the spectrum of direct and indirect stakeholders of home telecare lead to a set of influencers, not found as such in previous literature. Existing literature often states high level evaluations that often prove impractical in home care implementation projects. The influencers mentioned here can be used to shape implementation programs

relating to video communication of home telecare services in general. The influencers found in this study are closely related to the specific domain of video communication in home care, with its own distinct service and client characteristics. For example, the stability of financing of technology in the home care domain is a specific influencer with even more complexity than in for example hospital care. The relatively small number of participants, however, may reduce the generalizability of the influencers found in this study. The differences in services, technology and client case-mix between organizations and the focus on video communication may also influence the general applicability of the factors cited. Our goal was to identify factors influencing implementation success according to the stakeholders involved. These factors may point toward an agenda for organizations starting or struggling with home telecare implementation. The influencers as mentioned by the respondents are general opinions as expressed by a selection from the relevant stakeholder environments. Further research exploring to what extent the influencers indeed relate to implementation success would be of great value. Even though indicated as key to success, in the cases studied, limited attention was given to a detailed service-to-user match. This might help to identify the kind of service elements eligible for video communication substitution (*e.g.* medication follow-up, wound examination, etc.). One must be aware of secondary effects in terms of increased care burden for family or secondary caregivers and the shift in responsibilities as a result of transferring care activities. Little evidence of this awareness was found during this study. As stated earlier, we are approaching a new era of home telecare services and any subsequent benefits. In particular, best practice research in this area concerning service and content provision can contribute to the field. Furthermore, additional empirical research is needed - specifically aimed at measuring and following the progress of service (or contact) substitution by home telecare, the strategies to promote the adoption of home telecare and its effects on realignment of the influencers described here. In this sense, the earlier mentioned effect of the time dimension and subsequent lag in cost-effectiveness effects require further study. Specifically, the increasing maturity of the home telecare environment may lead to the alignment of goals with an implementation strategy encompassing a different set of influencers.

AUTHORS' CONTRIBUTIONS

TP and JP designed and conducted the study. TP carried out the data collection, performed the analyses and drafted the manuscript. JP and RF critically reviewed the manuscript. All authors read and approved the final manuscript.

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[APPENDIX A, B.]

[TABLE 3]

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TABLES AND APPENDIX

Table 1 – The integration of Fleuren's barriers and barlow's barriers in our framework domains.

Combined influence domains	Fleuren's factors	Barlow's barriers	Encompasses . . .
Technology	Characteristics of the innovation	Evidence of effectiveness	The product hard- and software deployment and operation needed for the application to function properly and as intended. *e.g. touch screens, network, and webbased application.*
External context	Characteristics of socio-political context	Local framework for support	The environment outside of the organization, potentially influencing the climate for innovation. *e.g. financial restrictions, laws, and supplier demands.*
Organizational climate	Characteristics of the organization	Organizational context and cultures Local framework for support	The implementation organization's availability of operational protocols and structures, the decision making infrastructure, attention to sense-making and (in)formal knowledge spread and (top) management support [2]. *e.g. management support, procedures and reimbursement for extra activities employed.*
User context	Characteristics of the adopting person	User needs and demands Project complexity	The innovation-values fit of the innovation; the extent to which targeted users perceive that the use of the innovation will foster the fulfillment of their values [11]. *e.g. privacy concerns, professional values, and ethical concerns.*
Implementation strategy	Characteristics of innovation strategy	Project complexity Local framework for support	The way the introduction of new technology is orchestrated. *e.g. top-down/bottom-up, planning and goals, embeddedness in organization.*

Table 2 – General organization and implementation characteristics of our study sites.

	A	B	C
General organizational characteristics			
Employees (FTE)	416	3020	1500
Region	Urban	Urban	Mainly rural
Implementation characteristics			
Location	Clustered housing blocks owned by organization		
Clients/clients connected (2010)	407/153 (intramural)	2712/75 (extramural) (787 clients intramural)	5000/335 (2009) (extramural)
Technology strategy	Co-developed with supplier	Joint venture with other care organizations	Joint venture insurer and telecommunications provider
Implementation	Central roll-out housing block	Decentral roll-out at client's house (local teams)	Decentral roll-out at client's house
Technology hard-/software	Touch screens, TV set-top boxes	Touch screens/multi-platform software	Touch screens

Appendix A. Topic list template

1. Introduction of research
   - Research theme
   - Approval of project management
   - Outline of questions
   - Approval of recording the interview
2. Initiation of home telecare engagement
   - What was and is your role with respect to home telecare implementation in institution X?
   - Would you care to elaborate on the *trigger* to participate and engage in this implementation?
   - Who initiated the project? Can you elaborate on the start of the project?
   - Could you elaborate on the initial goals and targets to be achieved at the beginning of the project?
   - How does these goals fit with the institutional strategy?
   - When did the project start? What stakeholders were involved in the project start-up?
   - What influence was expressed by these stakeholders during startup, according to you?
3. Technology
   - Were you involved in the technology selection? What were your main concerns and perceived benefits?
   - Could you elaborate on the choice process?
   - How did stakeholders react on the eventual choice?
   - Did the reactions lead to an alteration of change in the technology?
4. Implementation
   - Could you describe the main milestones projected and achieved during implementation?
   - What was your opinion about the implementation organization and strategy?
   - Could you elaborate on the planning of the project?
   - Did the initial, preset goals and targets change during the implementation process?
   - What activities did you undertake during the implementation process?
   - What activities were employed by other stakeholders?
   - Could you elaborate on the structure of the business case for the implementation?
   - What involved stakeholders had the most influence on the course and outcome of the implementation process, according to your opinion?
   - Did stakeholder roles and influence change over the course of the implementation? Could you supply examples?
   - Could you elaborate on the stakeholder management by the project team and top management during implementation? How were stakeholders engaged?

- What conflicts or bottlenecks can be identified in dealing with other stakeholders?

5. Influencers

- How would you rate the level of influence of the technology on the success of the project?
- How would you rate the level of influence of the environment (legal, financial) on the success of the project?
- If you had to supply a list of 5 most influencing factors on home telecare success, how would this list look like?

6. Conclusions

- If you had to start-up comparable projects again, what would you do differently?
- Are you satisfied with the (preliminary) results?
- Do you look at other, comparable projects in The Netherlands?
- What do you expect in the (near) future to change or contribute to home telecare?

Appendix B. Implemented services at study sites

In Table 3, the service characteristics of the study sites are presented.

Table 3 – Overview of differences in services available at the case study sites.

Category	Home telecare services	A	B	C
Contact and participation services	- Good morning, good evening services (more informal contact moments) - Social intermediary (connecting people)	X	X	X
Entertainment and comfort services	- Wide Internet access provision to clients, specifically categorized for seniors - Information requests - Door opening systems	X	X	
Safety services	- Personal distress alarm (connection between video communication system and alarm center) - Door opening systems	X		
(Medical) care services	- Monitoring appointments ('visits' previously in person)			

Summary points
Already known:

- Home telecare implementation has proven to lead to mixed results in terms of prolonged adoption.
- A multitude of domains influence home telecare adoption and implementations.
- Cost-effectiveness has not been proven unequivocally, hindering the diffusion of home telecare.

Added value:

- Insights in multi-stakeholder perceptions about crucial home telecare implementation factors support the understanding of the use and implementation of video communication applications.
- It seems that the stability of the technical and financial environment is key in the domain of home telecare for successful implementation at present time.
- The way stakeholders are engaged, from initiation to implementation of home telecare, plays a crucial role; champion-wise rollouts seem imperative connecting to the organizational characteristics of home care.