How can online communication enhance older adults' social connectivity?
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Chapter 6. Discussion

6.1. Answering the thesis’ questions

This thesis aimed to better understand how online communication can enhance older laggards’ social connectivity by addressing two questions.

The first question was: *How can the implementation of online communication tools among older laggard populations be managed in such a way that implementation results in the desired local change?* The findings presented in our literature review of rural implementation projects (Chapter 2) confirmed that, without intervention specifically aimed at changing the pre-existing socio-economic structures, technology implementation reinforces these structures (Katz & Aspden, 1997). In addition, the review led us to propose that dynamic shifts in ownership during implementation could facilitate sustainable adoption.

In Chapter 3, we investigated how sustainable adoption, as a form of local change, could be established within the context of multi-site implementation projects. For this, we drew on works that combine IS structuration theory (Barley, 1986; Giddens, 1984; Orlikowski, 2000) with socio-material elements (Greenhalgh & Stones, 2010; Johnston, 2001; Pentland & Feldman, 2007; Stones, 2001) in order to develop a multi-site practice perspective. We theoretically deduced three bridging mechanisms that underlie project and local interactions: practice alignment, shifting actors, and shared action. Through an embedded case study, we showed that each of these mechanisms could potentially facilitate local change. Bridging mechanisms allow project actors to have some, albeit limited, influence on local change. In addition, we observed that not only the local sites, but also the project site, underwent considerable social and technological change during the implementation process. We suggested three bridging tactics, which are practical applications of each of the three bridging mechanisms to guide managerial action. The bridging tactics are: modularization, integration, and joint organization. Thus, although it is impossible to fully control change outcomes of online communication implementation, implementers can apply bridging tactics to shape local change and stir it into a desired direction.
The second question addressed in this thesis was: *How do adoption factors and mechanisms shape the effect of online communication on older laggards’ social connectivity?* This question was addressed in the second part of the thesis, whereby Chapter 4 focused on adoption mechanisms, and Chapter 5 on adoption factors. During early exploration of the question, we noted that non-adoption of widely diffused online communication tools sparked feelings of social exclusion among older laggards (Chapter 4). This finding is in line with reports that non-adoption of widely diffused online communication tools reduces the frequency of offline interactions (Hage & Noseleit, 2015) and limits one’s ability to meaningful participate in offline conversations (Eisma et al., 2007). Online communication tool adoption can have the potential of reducing feelings of social exclusion.

However, we argued in Chapter 4 and 5 that changes in social connectivity induced by online communication depend on the socio-technical adoption process through which personal skills, values and emotions, technological features, social norms, and communication patterns intertwine. Based on the findings presented in Chapter 4, we proposed that online communication tools contribute to an older laggard’s social connectivity when they are used in accordance with ones values, emotions, and knowledge. Moreover, after observing considerable changes in offline social connectivity, we proposed that older laggards’ adoption of online communication tools increases their knowledge of these tools and may change their normative perceptions of these tools. As a result, adoption leads to a deeper understanding of technology-related remarks during offline communication, which enhances older laggards’ social connectivity.

The results presented in Chapter 5 confirmed that changes in social connectivity enabled by online communication can only be understood as being part of a wider socio-technical context. Moreover, the results confirm the findings presented in the randomized controlled trials of Slegers, Boxtel, and Jolles (2008) and Woodward et al. (2011). Similar to our findings, these scholars found that Internet adoption overall has no effect on older laggards’ social connectivity. Our study adds to this work by considering multiple forms of online communication and social connectivity as well as multiple user groups. We found that the effect of online communication depends on initial social connectivity and the interaction between the exact type of online communication (e.g., in terms of information richness and privacy risks) and social
connectivity (e.g., geographical proximity and emotional closeness). Different types of social connections, such as neighbors and friendships, are affected differently by distinct forms of online communication, e.g., email and Facebook use. Moreover, we observed a “buffer-effect,” whereby the socially well connected did not experience negative consequences of online communication. This observation led us to conclude that not only adoption patterns of online communication tools reinforce pre-existing structures of inequality (see Chapter 2), but also online communication itself negatively affects the “have nots” disproportionately.

In summary, we found that the effect of online communication on older laggards’ social connectivity is highly situated within its socio-technical context. Therefore, it is impossible to predict the overall impact of online communication on older laggards’ social connectivity. Instead, such relationships are dependent on the adopting individual, adopted technology, and socio-technical context in which it is adopted. For example, non-adoption of online communication tools does not lead to social exclusion when these tools are not used by other social actors (see also Hage & Noseleit, 2015). In addition, online communication can only contribute to an older laggards’ social connectivity when online communication patterns with others match the individual’s value judgments and do not cause emotional distress. Considering personal skills, values, and emotions; the technological environment, including the focal technology as well as alternative or supplementing technologies; and social norms and practices yields better insight into the role of online communication and the impact of the adoption process in the lives of older laggards.

6.2. **Research contributions**

Throughout this thesis, we make the case for a situated change perspective (Orlikowski, 1996; 2000) on online communication tool implementation and adoption in order to better understand subsequent changes in social connectivity. By applying a situated change perspective, we made four research contributions to the literature:

First, situated change perspectives on technology use have become popular in organizational IS studies after publication of the seminal papers of Orlikowski (1996; 2000). However, they have seldom been applied in the literature that studies the impact of online communication on older adults’ social connectivity. This literature has mostly focused on the identification of the factors that influence older adults’ adop-
tion intentions and decisions (see Appendix E). This adoption factor literature is relatively mature, and the findings are quite consistent across studies (Wagner et al., 2010a). However, we argue that applying a situated perspective to this research field provides richer insight into how changes in social connectivity occur through implementation and adoption of online communication tools. It challenges us to consider the underlying mechanisms through which adoption factors manifest and shape this change process. In addition, a situated change perspective implies that adopting older laggards are viewed not as users, but as social actors (Lamb & Kling, 2003) who are part of wider social structures that set the stage for the adoption process. As such, a situated change perspective reduces the ambiguity caused by inconclusive evidence presented in earlier studies, and helps us to better understand the deviating, and sometimes opposing, changes in social connectivity (noted by Dickinson & Gregor, 2006; Nef et al., 2013; Sum et al., 2008; Wagner et al., 2010a).

Second, situated change perspectives on technology use have been criticized for failing to conceptualize the technological artifact (Jones & Karsten, 2008; Leonardi, 2009; Leonardi & Barley, 2010; Orlikowski & Iacono, 2001; Orlikowski & Scott, 2008). Leonardi summarizes: “Thus, the physical features of a technological artifact in this perspective are usually considered stable and unproblematic while the perceptions, appropriations, and interactions that individuals generate in response to that technology are seen to evolve and change over time” (2009, p. 292, original emphasis).

To better position the technological artifact in situated implementation processes in multi-site implementation projects, we drew on work that explores the linkages and connections between structuration theory and socio-material perspectives (Greenhalgh & Stones, 2010; Johnston, 2001; Pentland & Feldman, 2007; Stones, 2001), and developed a multi-site practice perspective. In the multi-site practice perspective, we conceptualize technology not as a structure (Orlikowski, 1992), or as mediator for the enactment of structures (Orlikowski, 2000), but as an actor, albeit with different characteristics than the human actor. Such conceptualization allowed better insight into the relative roles of human and technological action and change in establishing local change outcomes.
Third, in this thesis, we acknowledge that online communication tool implementation and adoption frequently has unexpected and unintended structural consequences (Leonardi, 2007; Orlíkowskí, 1996). However, the high degree of complexity in situated change perspectives does not entail that such change cannot be managed. Managerial effort needs to be directed in order to achieve emerging optimization, instead of predefined outcomes. This entails a search for an efficacious match between elements in the socio-technical context, personal characteristics, and the technology at hand. For example, because the social and technological are interdependent (Leonardi, 2009), implementation should not only aim for technological, but also social change. Moreover, achieving desired local change requires dynamic leadership, whereby project ownership and responsibility for project activities shift between project and local actors at timely occasions. By shifting ownership, local and project practices are required to interact and adapt to better complement each other. As a consequence, the project site can undergo considerable social and technological change, which should enable project actors to better manage local change.

Finally, the digital divide literature has convincingly shown that pre-existing social inequalities are reflected in technology adoption patterns (Agarwal, Animesh, & Prasad, 2009; Goolsbee & Klenow, 2002; Katz & Aspden, 1997; Niles & Hanson, 2003; Stanley, 2003; Wellman, Haase, Witte, & Hampton, 2001). In this thesis, we found that the online communication-enabled changes in older adults’ social connectivity also reinforce pre-existing social inequalities. More precisely, among those older adults with few initial social contacts (i.e., within the neighborhood or with friends), online communication can have a negative effect on social connectivity.

6.3. Practical implications

We urge practitioners to be cautious with generic investments in, and promotion of, online communication if aiming to enhance older laggards’ social connectivity. Instead, we advocate a situated approach to online communication tool implementation and adoption. Although online communication is generally assumed to benefit older laggards’ social connectivity (Ambient Assisted Living Joint Program, 2012; Cody et al., 1999; Dillon, 2003; Erickson, 2011; Opalinski, 2001; Shapira et al., 2007; Saunders, 2004; Sokoler & Svensson, 2007; Tsai & Chang, 2009; Waycott et al., 2013; White et al., 2002), the findings presented in this thesis do not support this assump-
tion. Online communication can enhance, but under certain circumstances also reduce, older laggards’ social connectivity. The effect is situated in socio-technical structures, practices, and personal reflections on, and reactions to, these structures and practices. Moreover, we found that the adoption of online communication tools is often challenging for older laggards, who have to learn a new vocabulary and skill set, manage value-based conflicts, and cope with frustration, fear, and indignation. However, this challenging adoption process, perhaps more than online communication itself, can also contribute to older laggards’ social connectivity.

In this section, we make four recommendations to apply situated implementation and adoption approaches in practice that should facilitate inclusive implementation of online communication tools and remove adoption obstacles. The recommendations include: 1) critically reflect on the particular local changes that are desired, and the design guidelines and preconditions they imply; 2) combine technological with social interventions; 3) develop a stepwise modularization approach; and 4) apply dynamic leadership.

First, the results presented in this thesis show that different online communication tools affect social connectivity in distinct ways. The combination between the characteristics of the online communication tool at hand (e.g., information richness and privacy risk) and the type of social connectivity targeted (e.g., geographical proximity and emotional closeness) determine, in part, how social connectivity is changed over time. Thus, a thorough understanding of how online communication tools and social connectivity characteristics combine needs to guide and set basic preconditions for (but not prescribe) technology development. We, therefore, recommend that project and local actors be specific about the type of social connectivity they aim to enhance in order to reduce the likelihood of negative effects. In addition, project and local actors should closely monitor changes in social connectivity during implementation to be able to respond to, and adjust, emerging negative effects as soon as possible.

Second, we recommend that in order to lower barriers for older laggards to participate in online communication tool implementation, the implementers combine technological interventions with social interventions. Online communication tool implementation affects both the local repertoire of available technologies and the local practices formed with the available technologies. Social interventions are useful to
help establish new, or alter existing, practices to include the newly introduced technology in particular ways.

Third, we argue that a situated implementation and adoption approach is essential to understand and manage changes in social connectivity. However, in multi-site implementation projects, the opportunities for embedding and translating project interventions to the local context may be limited. We suggest that a stepwise modularization approach, based on early encounters with a range of local sites, may allow multi-site implementation projects to adapt to these local sites. Below, we provide two examples that illustrate how and why a stepwise modularization approach should work.

In the first example, one of the aims of the Verzoamelstee was to enhance the local social network of older villagers, also by means of online communication. However, the implementers encountered a strong technology aversion among local older laggards. Contrary to what some theories suggest, aversion did not disappear after clarifying to older laggards the convenience and user-friendliness of the technology. Instead, we observed that such explanations usually led to resistance at best, or indifference and ignorance at worst. Interestingly, some older laggards were curious about the technologies they heard about, e.g., tablet, Google, Facebook, although they did not consider adopting such technologies. Moreover, older adults preferred meeting other villagers. The project reacted by proposing three types of interventions to the villages: 1) organizing informal gatherings with tablets available for experimentation; 2) organizing informative gatherings in which technology-related issues, among other things, would be discussed; and 3) offering a tablet course that targeted older laggards. Depending on local structures and practices, one or more of these interventions were implemented in the villages, much like modules in a modular system.

In the second example, we illustrate the added value of a stepwise modularization approach. One of the three villages implemented all three interventions. Here, we observed that during informal gatherings, experienced older adults started to show to others websites, images, news, and movies via the tablet. Moreover, the turnout for the informative gatherings was usually relatively high. For some older laggards, these activities satisfied their curiosity regarding modern technologies. However, for
others, it was a necessary, first step that encouraged them to take the next step and sign up for a local tablet course. Thus, a stepwise modularization approach can lower or eliminate the obstacles to online communication tool adoption, and make the implementation process more inclusive.

Finally, we recommend that managers of implementation projects shift ownership over, and responsibility for project activities, to local stakeholders when possible, and only intervene when responsibilities are neglected. This could be achieved, for example, by supporting or facilitating (but not taking over) local initiatives; giving local actors a formal role in the project organization with responsibilities and decision power; or engaging in the joint organization of interventions with local actors. Not all attempts to shift ownership will be successful or sustained in the long run. Thus, project management needs to facilitate, support, or if all else fails, take back local ownership when local interest in the project is low. At the same time, project management needs to recognize that shifting local actors who become part of the project undergo some challenging transformation and constantly need to balance between local and project roles. As such, dynamic leadership can be an asset to the project, but is also challenging, and at times demanding, for both project and local actors. The local actor should, therefore, be selected carefully, and his/her shifting facilitated.

6.4. Validation, valorization, and future research

To ensure the validation of our conclusions, we presented (initial) research findings to participants and asked for their feedback in multiple occasions. Gathering feedback from participants when conducting interpretative research is “the single most important way of ruling out the possibility of misinterpreting the meaning of what participants say and do or what the researcher observed, and the perspective the participants have on what is going on” (Kaplan & Maxwell, 2005, p. 45). The participants included the IS implementation project team and older adults from the participating villages.

Early feedback sessions conducted with the project team were used to sharpen the aim and research questions of the literature review (Chapter 2). Later sessions were planned to translate outcomes of the literature review to the reality of the multi-site implementation project practices (for valorization).
Moreover, we fed back initial results of the interpretive multi-case study presented in Chapter 4 twice to the ten participating older laggards and the tablet course teacher to refine our research findings. Indeed, the participant reactions allowed us to polish the results. In general, however, they recognized the conclusions drawn.

In addition, the (preliminary) findings of the panel data study presented in Chapter 5 were fed back two or three times to older adults in each of the three villages (the last feedback session is planned for Spring 2015). Initially, the sessions were supposed to inform participants regarding the use of their data in the research, and highlight the relevance of the study. During the latest feedback session in one of the villages, we reflected on and discussed the implications of the study with the attending older adults. Their spontaneous remarks supported our findings and enriched our understanding. In particular, they provided insight into cultural aspects of online communication among older adults. Normative discussions regarding the role of online communication left the impression that older adults struggled to find a balance between “being modern” and their strong preference for in-depth, i.e., face-to-face, communication. The responses were in line with the findings presented in Chapter 4.

Moreover, we ensured valorization of the results by presenting them to the organizational bodies of the implementation project under study, e.g., the project board and its sounding board, as well as for patient association “Zorgbelang,” the center of expertise on standardization and e-Health “Nictiz,” the Dutch Ministry of Internal Affairs, and an elected representative from the province, Mrs. M. Besselink. Moreover, procedures were discussed with an older adult sounding board installed by one of the project sponsors: The National Care for the Elderly Programme (NPO) (an overview of the project and practitioner presentations can be found in Appendix L).

We propose three directions for future research. First, the situated change perspective on the social connectivity impact of online communication tool adoption and implementation could be extended to other adult populations, for example, younger adults, earlier adopters, and urban residents. Although especially younger adults seem to have been better studied within this field compared with older laggard populations living in rural areas (see for example, Steinfield et al., 2012; Xie, 2008a), most studies fail to include more contextualized perspectives. Future research could as-
sess whether similar mechanisms underlay the implementation and adoption process of online communication tools. Moreover, it would be interesting to see how implementation and adoption mechanisms shape changes in social connectivity among younger, more innovative, and more urbanized populations. Such future research would allow deeper insight into variations in implementation and adoption mechanisms among different populations, and guide more specified implementation and adoption strategies.

Next, future research could apply the bridging mechanisms identified in this thesis to other contexts where multiple social groups (are supposed to) interact. Such research could identify new bridging mechanisms, or new applications of existing ones. For example, we could imagine that alternative applications of bridging mechanisms have the potential to divide instead of bridge, leading to conflict and divergence between social groups.

Finally, because some of the results of our panel data study are only slightly significant, we suggest repeating the study among a larger and potentially more diverse older adult population. Alternatively, a controlled trial that considers multiple forms of use and social connectivity among a diverse older adult population could provide further proof for our finding that the impact of online communication on older laggards’ social connectivity depends on the exact combination of social, technological, and personal characteristics.

6.5. Conclusion

Answering the two questions posed in this thesis helped to fill implementation and adoption knowledge gaps. Together, they provided novel and richer insight into how online communication can enhance older laggards’ social connectivity. Arriving at the end of this thesis, we consolidate with five main conclusions:

1. This thesis warns us to be cautious with generic investments in, and promotion of, online communication when aiming to enhance the social connectivity of older laggards because any impact of online communication depends on personal, technological, and social mechanisms and factors.
2. Without interventions that aim to change pre-existing socio-economic structures, the implementation of online communication tools reinforces socio-economic inequality.

3. Online communication tends to have a disproportional negative effect on the older “have nots” because it benefits the well connected while harming isolated older adults.

4. To understand the effect of online communication on older laggards’ social connectivity, a situated change perspective on adoption is required that goes beyond the identification of adoption factors.

5. Although a situated change perspective implies that implementers’ influence on local change outcomes is limited, implementation and adoption mechanisms are proposed that implementers can use to stir local change.