



Digital Home: Life Transitions and Digital Domestic Practices in Later Life

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Abstract. As older adults become active users of digital technologies, digital activity among this age group is increasingly associated with life stage factors. This paper discusses the understanding of life stage as explanatory factors in older adults' digital engagement by exploring the association between life transitions and digital domestic practices in Finland. The study is based on an analysis of qualitative, in-person interview data from 20 participants between the ages of 50 and 78 who recently bought their own apartment in Western or Central Finland. The aims are to identify variances of life transitions in relation to domestic practices, investigate the association between life transitions and digital engagement at home, and evaluate the possibilities for incorporating digital domestic ecosystems into the daily lives of older adults. The study makes three main propositions: digital domestic practices are influenced by financial decision-making processes in households; life transitions and changes in social and personal relationships influence the emergence and creation of digital practices at home; and the appropriation of digital domestic ecosystems requires social and cultural changes regarding the desirability and accessibility of digital services. To this end, the study considers the extent to which the concept of life stages could be taken into consideration in the digital design of domestic practices among older people in Finland.

Keywords: Digital technologies · Ageing · Life transitions · Digital domestic practices · Digital home

1 Introduction

Older adults' engagement with digital technologies is influenced by various personal, socio-demographic and socio-economic factors, such as age, attitudes towards technology, cognitive abilities, personal interests, education level, as well as availability and access to technology [6, 15, 18, 19]. A key question has been whether age predicts digital activity, or whether digital engagement is shaped by life stage factors, such as life transitions and changes in social and personal relationships [8]. This paper discusses the understanding of life stage as an explanatory factor in older adults' digital engagement. It explores the association between life transitions and digital domestic practices among older adults in Finland. These issues are becoming more relevant as the number of older people is increasing and societies need to develop new solutions to

support independent living among older adults, and engage them in exploiting digital technologies widely in various servicescapes [10, 18].

The study investigates the role of life transitions in digital domestic practices among older adults from three standpoints. The first is to identify the variances of life transitions among older adults in relation to domestic practices (research question RQ1). This is conducted by addressing certain life events in the life courses of older adults that contribute to creation of new alterations and inspirations for digital engagement.

Second, the study aims to investigate the association between life transitions and digital engagement by analysing the interfaces where life transitions and digital engagement overlap (RQ2). Research has suggested that certain life events, such as the departure of children from home, or retirement, may provide new drivers for older adult's digital engagement [18, 19]. Typically, the presence of children in the household may improve adults' digital skills and motivation to use digital technologies [8]. When children leave home, the family dynamics changes which may result in changes in digital engagement among adult family members.

The third objective of the study is to evaluate the emergence of digital domestic ecosystems and possibilities to appropriate these technologies in older adults' daily lives (RQ3).

The paper begins with an introduction to the concepts of digital domestic practices and life transitions. This is followed by an analysis of a qualitative data set collected in 2016 as semi-structured in-person interview data for participants ages 50 to 80. Finally, the study discusses the extent to which life transitions can be considered an explanatory factor when investigating older adults' digital engagement, and how life stage could be taken into consideration in the digital design of domestic services for older people in Finland.

2 Digital Practices in Domestic Environments

Digital domestic practices refer to the application and usage of digital technologies in domestic environments and domestic management [13]. Previous research discusses managing digital content at home in terms of 'digital housekeeping', which refers to the management of networked home, encompassing a multitude of devices and services and their interrelations in an ecology of media [23]. Digital domestic practices are constructed around specialised knowledge, skills and comprehension and specialised strategies, activities and characteristics understood as agency in decision-making [13]. Digital domestic 'expertise' thus involves social and cultural capital to media and literacies to apply in the contexts of daily home life.

The domestication of technologies in the home is a process in which all family members influence the formation and negotiation of social rules around particular technologies [11]. The household structure is connected to the practices through which digital technologies are integrated into the organisation of everyday life, involving an element of social interaction between family members in the household. The influence of household structure on digital domestic practices can be evaluated by addressing the presence of young people in the household. Young people are usually regarded as

motivators or teachers in adults' technology use, as they encourage adults in the same household to use the internet and use different digital technologies in ways unfamiliar to them [8, 20, 21]. Parents, on the other hand, finance and regulate children's computer use [25]. Adults are presented as newcomers in digital environments in comparison to young children, who often limit adults' access to digital technologies by dominating the spatial environment of the household [24].

Digital domestic practices include housekeeping activities that serve to maintain the functioning and maintenance of the household, such as meal planning and preparation, shopping, cleaning, laundry, maintenance and repairs, care of adults, children and pets, management of bills and expenses and transportation [5]. Digital domestic practices also involve managing digital content in the form of identifying, accessing, storing and organising digital content in relation to household needs [23]. Media activity practices, such as selecting and downloading movies, organising TV, radio or music content are part of digital management in daily life that also include aesthetic requirements of the home environment, such as stacking hard drives neatly, hiding wires, making devices look orderly, and so on [13]. This digital household management occurs in relation to and within the interaction of family relationships and household members that affect the development of digital practices at home.

3 Digital Practices in the Lives of Older Adults

The application of digital technologies to domestic practices is influenced by age, but also by other socio-demographic and socio-economic factors that represent the life stage of older adults [6, 15, 18, 19]. Older adults, aged approximately 50 to 74, are influenced by various life transitions, including changes in family or employment status, that may influence on their abilities, skills and needs in digital technology use. Quite often, these life transitions are associated with changes in living arrangements and living environments.

At this life stage, adults typically encounter transitions related to social and personal relationships [2, 14]. These transitions are embodied in relation to changes in work life and changes in family structures [12], and they may act as a driving force behind new living solutions. For instance, changes in work life may motivate older adults to relocate to a new city or even to a new country [16]. Changes in family structures may inspire older adults to pursue their own interests, which are often related to housing and living. With ageing, social networks may narrow, but become more meaningful [2], and older adults may thus have a stronger need for maintaining ties with established social networks [1, 7]. Older adults are highly motivated to use these to keep in touch with family members in particular, and to strengthen social and personal relationships that are often transformed in later stages of life [19].

In a qualitative study of adoption of information and communication technologies, older adults' motivations and reasons for computer use in the household were investigated [21]. The interviewees, who were aged 60 and over, said they had started using computers as a consequence of some significant life event, such as a heart attack, which motivated them to keep up to date with technology that helped in maintaining independence when financial security and mobility were threatened. Technological innovations thus provide opportunities for independent, safe and secure living for older adults [3].

In the appropriation of digital technologies, encouragement from children or younger members of the household who want their parents to use technology may significantly influence decisions to acquire new technology [21]. In the incorporation of technologies, older adults use social strategies that involve families and friends as driving forces in the acquisition process of technology [17]. In all phases of making sense of technology, older adults thus rely significantly on the social relationships that encourage and support them in the acquisition of these devices [21]. Incorporation of digital technologies into daily life is thus influenced by users' networks, which affect the social understandings of these artefacts [3, 4].

4 Materials and Methods

The study analyses a qualitative data set entitled *Housing, Digitalisation and the Life Course*, which was collected between November and December 2016 as part of a research project entitled '*DIGI50 + Mature consumers, customer experience and value creation in digital and physical environments*'.

The data set includes 20 in-person interviews conducted among 11 males and nine females. The participants were recruited using a database owned by YIT Group, one of the largest housing manufacturers in Finland. The recruitment of participants was conducted under two criteria: they had bought a new apartment during the last 12 months in Western or Central Finland, more specifically Jyväskylä or Tampere area, and they belonged to the over 50 age group. An invitation was sent to 157 members of the data base (107 in Tampere area and 50 in Jyväskylä area), and 20 reported as volunteers. Each of the interviews lasted approximately 60 to 75 min, and were held in the University of Jyväskylä or in the University of Tampere as in-person interviews with one or two interviewers present in each interview. Of the interviewees, nine lived in the Tampere area and 11 in the Jyväskylä area that are growing regions in Western and Central Finland.

The interviews, carried out as semi-structured in-depth interviews, covered the following research areas: the person's current housing and living situation, life transitions that resulted in changes in housing, and digitalisation of domestic environments. In the interviews, participants were asked to describe these issues in their current living, and the interviewers presented specific sub-questions to explore these issues in more depth. The interviews were guided by the presumption that housing is associated with life stages, and therefore the interviewers wanted to gain an overall view of the interviewee's life situation.

The analysis was guided by conceptual presumptions regarding life stage, life transitions and digital engagement [6, 8, 12, 15, 18]. In the first phase of the analysis, all expressions related to digital technologies in domestic environments were separated from the main text. In the second phase, expressions were thematised under three categories: financial decision-making in digital environments, life transitions and digital domestic practices, and designing the digital home in later life. In both phases of the analysis, the unit of analysis was a sentence or statement articulated by a particular interviewee. The data expressions were interpreted in order to understand and explain the association between life stage and digital engagement.

5 Research Findings

5.1 Financial Decision-Making in Digital Environments

When reflecting on their choice of housing, the participants generally felt the decision was primarily guided by financial considerations. Many shared an experience of living their young adulthood years with limited financial resources which reflected their housing conditions as young adults. The participants generally described their housing path as a desire to improve on their past housing conditions and quality of life. Now, in their fifties and sixties, the participants who represented property owners, generally had a good level of income, which enabled many to re-evaluate their housing choices and make improvements. This experience was associated with ideas regarding smart home solutions and emergence of digital technologies in domestic environments:

Now when I have it [a higher income] I can buy it [a new digital technology] if needed. I don't want to buy new things all the time, only when something is broken. (Male, 68)

For most of the participants in the 50–60 age group, digital technologies were integrated into their daily lives to a wide extent, and they actively described their use of digital technologies for banking, communication, social media, searching for information and other daily necessities. Participants in this age group generally said they had much less difficulty in digital engagement in comparison to older participants, who did not articulate their opinions or impressions of digitalisation of domestic environments as clearly. However, many participants from all ages considered themselves to be careful and moderate users of digital domestic technologies, and rarely described their relationship with digital technologies with enthusiasm. Older adults were digitally active in those practices that were associated with utility value, whereas digital media practices with a focus on gratification or entertainment were considered less appealing or important by the participants.

We have a very fancy [smart] television and we cannot really use it, it requires updating all the time, you can use the television for the internet, YouTube and Twitter and all that [...] but we rarely use it [...] luckily we have these online help services to help up with that. (Male, 68)

*I don't trust them [digital domestic technologies]. If I leave the house and could turn the washing machine on with an app, I wouldn't trust it. I would only do damage [*laughs*]. (Female, 50)*

Decisions to acquire new technologies at home were thus carefully considered by the participants, and they did so in relation to their social and family situations. The presence of new technologies in the home was seen as something involving the whole family, and which thus influenced the lives of others in the household. Despite that many of the participants said they used digital media for communication with family members, application of digital domestic technologies was still relatively rare.

I ask my family members which technologies I should buy, and which software is best. (Male, 52)

If we have a home cinema or something like that at home, it's our son who always fixes it. I have delegated it to him; it [home cinema] is more for the young people. (Male, 52)

For many participants, the question of digitalisation of domestic practices involved finances and financing one's own housing decisions. Most of the participants considered digital domestic technologies and smart home solutions to be something they cannot afford, and that are too expensive for their everyday lives:

*Technological developments and new apartments are quite expensive, and many people cannot afford to buy [*laughs*] unless they receive a heritage or win the lottery. It limits things a lot, how technology is developed at home. (Male, 52)*

*That would be nice, if you are coming home and you could turn on the sauna, I don't have that kind of possibility [*laughs*] but that would be nice, or to see what is in your refrigerator and you could order food when you come home. [...] I might pay for that. But I suppose that would be so expensive that I could not afford it [*laughs*]. (Female, 53)*

Finland has a long tradition of house ownership, and many still consider ownership one of the most important factors behind housing decisions. One of the interviewees, who has in the past lived abroad for several years, could not understand the Finnish practice of spending majority of one's income on housing:

For us [the Finns], housing is given too much importance. It takes too much of your income, it restricts other things. [...] You need to buy a home and then pay the mortgage for several decades, you cannot afford to travel or have expensive hobbies. It would be much more reasonable to live in a more urban environment so that you can walk to cultural events, restaurants, movies and meet people. (Male, 78)

When understanding and interpreting older adults' needs and capabilities in relation to digital housing solutions, therefore, cultural factors regarding housing decisions as established practices of financing them may explain the extent to which older adults in Finland are willing to apply digital technologies at home. The Finnish culture of independent living and ownership of one's home encourages consumers to invest their resources in improving their quality of life through advanced housing solutions. Despite many of the participants evaluating their income level as relatively good, they still considered new digital technologies to be too expensive for their daily lives. These financial decision-making processes regarding housing decisions and digital solutions therefore reflect the characteristics of Finnish consumer culture more generally.

5.2 Life Transitions and Digital Domestic Practices

During the interviews, the participants generally described changes in their housing path in relation to changes in family status or employment situation. When sharing their experiences from their personal housing history, the participants discussed changes in their relationships such as starting a new relationship, ending a relationship, starting and ending education and establishing a work life [9]. Female interviewees in particular stated changes in their personal relationships as the main inspiration for alternative housing solutions. However, these reasons were pronounced among the male interviewees:

Could you describe what has influenced [your decisions] along with ageing?

*I had a divorce process and I was looking for an apartment, I went to all kinds of awful places [*laughs*]. Then I thought, I have to move to a great place. Somewhere that feels like home. And after that, I've learned to appreciate it. (Male, 53)*

For many of the participants, changes in their housing path were characterised by positive emotional changes, particularly if housing decisions were accompanied by starting of new relationships. During their life courses, many of the participants had experienced various forms of housing and living arrangements, both living alone as a single person, living together with a spouse and living together with other family members. At the later stages of life, interviewees described their living in terms of established habits and routines. Despite that, most participants orientate themselves positively towards new changes and alterations:

*It is a positive change to move in with someone. Prior to that, I lived alone for nine years, before that I was married. It was a big change, after getting used to living alone, with all the personal characteristics that I have [*laughs*]. (Female, 50)*

For some of the interviewees, these changes resulted to new contemplations in digital domestic practices. For particularly the female participants, moving together with someone and starting a new relationship brought along new digital routines and habits from the part of their spouses. Interviewees described these new digital practices brought along by their spouses with consideration and sometimes with judgement, and in many cases they were not willing to adopt same digital habits, particularly if these new digital practices were in contraction with their own identities and values in general:

I use a tablet computer due to work and my personal interest. It's now my world, it's more my spouse who takes care of it. It's his hobby. My work has forced me to use them, and sometimes I browse the internet at home. But I don't play with computers or like gaming at home, even though [my spouse] does that. I'm spending all my days with the computer, so at home I want to do something else. (Female, 50)

The adoption and use of digital domestic technologies occur in the household where all members influence on technological decisions [8, 11, 21], individuals and families show a lot of variance in the extent to which children and other family members influence the application of digital technologies at home. During the interviews, this heterogeneity was clearly highlighted. For some of the participants, children had a major role when teaching or motivating adults to embrace digital domestic practices, but this was not the case for all:

Did you notice that children would teach you or bring technology into your everyday life?

Well, some have. But not all. My niece, who is 20, is not very active with digital [devices]. (Female, 50)

Whether children could actually teach their parent how to use technology at home could therefore be highly dependent on other factors. According to the interviews, these factors may include, for instance, the digital skills levels of younger people at home, the frequency of communication between family members, the extent to which older adults participate in working life, and the quality and intensity of other social

relationships in daily life. For some of the interviewees, it was older adults at work who had a stronger impact on the adoption and use of digital technologies in domestic environments than the presence of children in their daily life:

In your case, have your children influenced your use of technology in any way?

Yes, they have. My kids have taught me what they knew themselves. Or then [I learnt] at work. It's mostly from work where these laptops and tablet computers, smartphones come from, there I can get help. (Female, 53)

For those participants who were still actively involved in work life, it was the work environment that influenced domestication practices of technologies, particularly if the children or other young people possessed less advanced digital skills or were not involved with similar technologies as the older family members in the household. Interviewees who were approaching retirement mentioned children as the most important source of incorporating digital technologies to domestic environments:

Do your kids use technology more than you do?

Yes, they do. I have a son, and I call him when something is not working. My son fixed my computer at home. He was here in the summer. He ordered the parts from the internet. (Male, 60)

We have very close relationships in our family. There are six people in our household, we are actively involved during holidays. We just spent our holiday in Germany, for all six of us. We always try to get the whole family together (—) We will send videos and pictures, and it does help us to get the whole family together. (Male, 60)

Offline communication practices between younger and older adults in the household thus significantly influenced to what extent the children encouraged or supported older adults' with their participation in digital environments at home. Those participants with more frequent offline communication practices between family members discussed the role of their children in digital engagement more often than those who possessed less frequent contact or communication with their children. If the family members were actively involved in each other's lives outside of digital environments, it was perhaps easier for them to ask or offer support in digital domestic practices at home. The frequency of digital communication in general thus seemed to be associated with support that was provided in the usage of digital technologies in the context of home in particular. Those participants who did not actively discuss or mention the role of their children in the incorporation of digital domestic practices, rather discussed about other social and personal relationships that influenced the help and support that was available to them in the usage of digital technologies. Being seen as part of the household environment, mothers and sisters were sometimes considered equally important enablers or supporters of digital technology use. Therefore, life transitions that inspired or motivated older adults to adopt new digital practices were experienced in relation to all social and personal relationships:

Was your decision [to buy a home] preceded by some kind of life changes?

Well, my children moved away from home, that is. I was laughing, now when I don't have the kids anymore, then it's my mom who moves to my house! (Female, 53)

I had a new internet connection. I had to learn it.. but then I received help from my sister so that I could have the laptop in my use. At first it wasn't working, but my sister helped me with it. (Female, 56)

5.3 Designing a Digital Home in Later Life

During the interviews, the participants were shown a prototype (a picture) of a digital ecosystem representing the emergence of digital and physical services integrated to everyday living and housing. In this ecosystem, digital and physical services regarding domestic tasks, food delivery, health applications, care services and physical exercise were provided by the housing cooperative, indicating the easy accessibility of these services through digital platforms. The participants generally considered the emergence of new digital ecosystems to be valuable, but they discussed the importance of the ability to access these services independently:

What kind of thoughts do you have about housing services, that would be connected to your home, for example the possibility to have care or help with domestic tasks?

I suppose they are important for older people. But I can stand with my own feet, I don't really need them. But perhaps later I will. (Male, 58)

*Many of those [services] are important. But maybe I don't need them in my own life. I like to go to my own gym in the city. And services regarding other domestic tasks... well I like to use my favourite ones that I have used for many years. I have a close relationship with them [*laughs*]. I like to go to a certain hairdresser, food store... I don't need them at home.* (Female, 50)

For the older adults, using digital services at home was thus associated with old adulthood when the individual is more dependent on the help of other people [12]. In their fifties, the participants evaluated their physical abilities as good and wanted to maintain these abilities and skills by using physical services instead. Many of the interviewees already had existing relationships with service providers, which was perceived more important than having increased accessibility to physical services through digital platforms.

The participants discussed their personal needs regarding the emergence of digital ecosystems in relation to health and wellbeing. A possibility to enjoy nature or time with pets in an urban environment was considered desirable; gardens and pets, for example, were mentioned as being important to a sense of personal wellbeing. Most participants mentioned the importance of going to the gym or other possibilities for physical exercise. The idea of creating hybrid practices in urban environments received attention, and the emergence of new ecosystems integrating physical services to natural and authentic environment was regarded as a pleasant experience for older people.

Green house, or a room with pets, for example cats and dogs. And maybe a hairdresser. To have services near you. (Male, 50)

I would like to be able to talk and chat with people. Especially when you are old, to have social connection and community. Now when I'm still working, I don't need it, but when I'm old... I'd like to have it nearby. (Male, 52)

Regarding the life stages of the participants, the life transitions represented in the form of changes in social and personal relationships and employment status were thus well represented in how they discussed their needs in relation to the emergence of new digital ecosystems. Needs and aspirations were associated with work and family status that created the framework for everyday living. When still employed and actively participating in work life and having social contacts and interaction in the workplace, participants did not see the value of having social or community living near them. Despite this, they recognised the changing needs followed by life transitions and were preparing themselves to adjust their living environment to these changing aspirations.

The emergence of digital ecosystems that increase the accessibility of physical services through digital platforms is a new phenomenon in Finland, and most of the participants lacked experience in using these kinds of services. Most of the participants has positive images of new digital domestic services, but many still appreciated the possibility to carry out domestic activities on their own. Based on the interviews, older adults expressed their concern at not being able to actively participate in cleaning, renovating and taking care of the home or garden, rather than their willingness to participate in digital ecosystems in their old age:

We have not used or needed anybody's help [with domestic tasks]. When moving to an apartment, it felt as if there's nothing to do here. Living in a detached house of your own, you have always lots of things to do. Renovating, cleaning and such. (Female, 73)

6 Conclusions

This study has shed light the role of life transitions in older adults' engagement with digital domestic technologies from the perspective of life transitions that occur in relation to social and personal relationships. In response to RQ1, the study identified changes in personal and social relationships as well as work life and employment situation that influence the life stage among adults in their fifties and sixties. For the lives of older adults, these life changes were seen as an inspiration for creation of new living solutions and domestic practices. Some previous research has found that a person's relationship with their spouse is one of the most important factors representing developmental phases of later life [9, 12], suggesting that changes in this relationship could inspire the creation of new digital practices simultaneously. For the participants in the present study, this relationship was regarded as perhaps one of the most significant in their daily life and domestic practices, indicating that it could influence the incorporation of digital practices in the household.

In response to RQ2, the study aimed to address the associations between life transitions and digital engagement in domestic environments. Based on the findings, this association was not clearly pronounced in participants' speech, but was instead included in the way digital technologies were understood as part of the household structure and family situation in general. For the adults in their fifties and sixties, digital technologies were already integrated to daily living to a wider extent, thus the incorporation of these technologies to domestic environments was understood also as a financial decision. Many of the interviewed adults experienced digital domestic

technologies as too expensive for their daily life. Life transitions, particularly those related to work and employment changes, may be associated with financial resources and therefore these changes could both weaken or strengthen engagement with digital domestic practices. Thus, when the household structure or income level changes, it provides older adults new aspirations to re-evaluate and re-create the already established domestic practices.

Regarding the role of children as motivators and teachers in older adults' digital engagement [8, 20, 21], participants expressed many variances and heterogeneities in their speech. For participants with close family relationships, the children played a major role in domesticating digital technologies at home, but for other participants it was rather other relatives or adults in the workplace who provided support in digital technology usage. This suggests that life transitions related to the departure of children from the household may create a need to establish or strengthen new social and personal relationships. For most of the participants, this life transition was not seen as a negative thing but rather as something that could bring new possibilities for personal interests and pursuits.

In response to RQ3, the paper aimed to evaluate the possibilities for older adults to incorporate digital domestic ecosystems in their daily living. The study concludes that application of digital technologies to increase the accessibility of physical and digital services is not considered an appealing choice in older adults in their fifties and sixties. In that life stage, which is typically characterised by employment and a relatively good income, older adults typically perceive themselves as capable and interested in acquiring personalised services or maintaining existing ones. Incorporation of digital ecosystems was associated with a life stage when the capabilities are limited, and possibilities are restricted in terms of individualised choices. For these reasons, cultural and social changes related to the desirability and accessibility of digital ecosystems are needed in order to support the engagement of older adults with digital technologies for domestic practices.

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