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Exploring stakeholder perspectives on user involvement in designing digital public services for older adults

by Laura Pajula, Riitta Hänninen, Viivi Korpela, and Sakari Taipale

Abstract

Digital public services can enhance well-being but also increase inequalities in society. Drawing from the Access Rainbow Model, we investigate user involvement in designing digital public services for and with older adults from the perspectives of Finnish stakeholders. First, (1) we ask what the typical challenges for older adults are accessing digital public services according to the stakeholders. Second, (2) we explore how stakeholders view the involvement of older adults in designing digital public services. Our research data was collected in the "Digital Inclusiveness in Finland" project and consists of 20 semi-structured interviews conducted among Finnish stakeholders from local-, regional-, and state-level public administrations and non-governmental organizations in 2021. Based on the data-led inductive thematic analysis, we argue that despite recognizing the heterogeneity among older adults, stereotypical assumptions continue to influence the design process. User involvement is viewed as a valuable but currently unimplemented practice, as no one presently bears the responsibility for involving users in the design process.

Contents

Introduction

The number of digital public services has increased rapidly during the last decade to serve citizens, offering fast transactions, access independent of time and place, and more services at reduced costs (Vilpponen, *et al.*, 2020). However, not everyone has the same opportunities to utilize these services. Like other Nordic countries, Finland is a highly digitalized society where interaction between the public sector and citizens

increasingly occurs through digital services. In Finland, digital public services cover a diverse set of services from health to taxation to social care. Typically, digital services are the fastest way to interact with authorities regardless of time and location (Finland. Ministry of Finance, 2023). Additionally, among other Nordic societies, Finland is characterized by an aging population, 23 percent of the population being over 65 years old (Official Statistics of Finland, 2024a). By 2070, the number of older people is estimated to rise to almost 35 percent (Official Statistics of Finland, 2019a). Paying attention to user needs when designing digital public services can enhance digital inclusion and equal opportunities for active participation in society.

In this study, the focus is on digital public services, also referred to as digital services. These services encompass government or public-sector offerings provided to citizens using digital technologies, usually through the Internet. Previous studies have shown that digital services often fail to meet the needs of older adults because they are typically excluded from the design and development of these services (Jarke, 2019; Mannheim, *et al.*, 2019). Instead, digital services are designed for technology-savvy individuals by technology and design professionals, exacerbating the digital divide where some users benefit more than others from digital services (Schou and Hjelholt, 2018; van Deursen and Helsper, 2015). To enhance older adults' access to digital public services, involving them in the design process is essential. An inclusive digital welfare society cannot depend on services that some citizens find challenging to access.

Digital divides refer to the gap between individuals who have access to digital technologies and services and those who do not (van Deursen and van Dijk, 2019). Approaches to investigate digital divides have evolved from assessing physical access (first level), to examining digital skills and literacy (second level), and, more recently, exploring the outcomes of usage (third level) (Hunsaker and Hargittai, 2018; van Deursen and Helsper, 2015; van Deursen and van Dijk, 2019). Despite efforts to address digital divides, they still remain, exacerbating inequalities within society (Hunsaker and Hargittai, 2018; Ragnedda, 2017). In the context of digital divides, access often encompasses necessary digital skills, adoption of digital services, and usability (van Dijk, 2020). However, a deeper understanding of the multifaceted concept of access is needed. Clement and Shade's (2000) Access Rainbow Model considers access as a combination of intertwined socio-technical aspects including literacy, technical components, services, and governance to create universal access for all citizens. Traditional digital divide approaches often overlook user involvement in designing and developing digital services. Therefore, we chose the Rainbow Access Model to investigate the role of governance in supporting user involvement as a critical part of designing digital services. As public service provision becomes increasingly digital, user involvement in designing digital services is necessary to support and ensure the multifaceted nature of access, allowing citizens to actively participate in society.

This study aims to investigate the service-delivery side from the perspectives of local-, regional-, and state-level public authorities, and professionals in non-governmental organizations (NGOs) on the design of digital public services for and with older adults. The authorities in ministries and municipalities are involved in or have information about the procurement of digital public services. Officers in NGOs reside between the government and older adults, mediating their needs, experiences, and interests concerning digital services. Finland, as a highly digitalized and well-established welfare society, serves as a valuable contextual example for our study, allowing us to explore broader themes of access and user involvement. Therefore, this research combines the perspectives of central stakeholders crucial to the design of digital public services stakeholders and offers new information on the principles to enhance access through user involvement in digital public services.

Against this backdrop, this paper aims to uncover the challenges associated with user involvement in the design of digital public services, using the Access Rainbow Model as a framework. To reach this aim, we will answer the following research questions:

1. What are the typical challenges for older adults accessing digital public services according to the stakeholders?
2. How do stakeholders view the involvement of older adults in designing digital public services?

In the following sections, we first introduce the key concepts of this study starting with the Access Rainbow Model, followed by the concept of user involvement, and then continuing with a contextual description. Next, we introduce data and methods used in this research. We analyze the data by using data-led inductive thematic analysis. We examine three themes emerging from the interview data, including the heterogeneity of older adults, challenges related to digital services, and user involvement as a part of designing digital public services. Finally, we discuss the results and limitations of this study and propose future directions.

Rethinking access in later life

Due to inequalities caused by digital divides, individuals face obstacles in learning, adopting, and using digital technology as part of their everyday lives (Friemel, 2016; Kuoppamäki, *et al.*, 2022). Digital inclusion, in turn, goes beyond access and encompasses the idea that everyone should have an equal opportunity to participate fully in digital society (Hänninen, *et al.*, 2021b; Reisdorf and Rhinesmith, 2020). In the context of digital divides, van Dijk (2006) suggested that access could be categorized into mental, physical, skills and usage access. Having physical access is the first prerequisite to use digital services but among those who already possess the necessary devices and Internet connection, access should be considered as a multifaceted concept that covers different levels of distribution and capability (Selwyn, 2004). To acknowledge this, Clement and Shade (2000) developed a framework that portrayed access as a rainbow consisting of interrelated layers, including infrastructure, devices, software, content and services, literacy, and governance.

In Clement and Shade's (2000) Rainbow Access Model, lower layers represent technical aspects of access, such as information infrastructure, devices and software tools. Upper layers emphasize the social dimensions, including service providers, services, literacy, and governance. In the model, governance encompasses the processes for making decisions related to the development and functioning of the information and communication infrastructure. The service layer remains the central element in the middle, with the aim of offering actual utility directly to citizens. Additionally, citizens should find digital public services meaningful and have access to resources for daily use. While Clement and Shade (2000) call for participative design and involving users in design and decision-making at different layers of access, governance plays a crucial role in ensuring citizens' right to participate in those actions. Therefore, it is important to study the view of those stakeholders who may influence older adults' involvement in designing digital public services.

Older people form one potentially vulnerable group as determinants of digital divides are typically considered to be age, gender, education, level of income, and ethnicity (Tsatsou, *et al.*, 2017). In terms of technology use, older adults form a heterogeneous group with varying structural and attitudinal factors, such as social class, education, attitudes and individual actions (Hänninen, *et al.*, 2021a, 2020; Neves and Vetere, 2019). Therefore, the reasons for using or not using digital services differ depending on individual life circumstances and available support. Previous studies suggest that older people's use and non-use of digital technologies vary regarding their attitudes, motivation, skills or unwillingness to use digital services, as well as declines and changes in physical, sensory, and cognitive skills (Hänninen, *et al.*, 2023; Neves, *et al.*, 2013; Quan-Haase, *et al.*, 2018). These factors can either facilitate or hinder access to and use of digital services, potentially resulting a situation where older people cannot fully benefit from them.

As digital public services are becoming the primary means of accessing various services and as traditional public services diminish, particularly in the rural areas, it is essential to understand that older adults may become dependent on their family or friends if they cannot use digital services. Also, non-use or limited use of digital services may lead to digital and social exclusion (Reisdorf and Rhinesmith, 2020). While stakeholders in governance and NGOs must focus on improving access for older people and bridging digital divides, access should be critically considered in the design and development of digital services. Through

user involvement, designers can gain in-depth knowledge of older users' needs and enhance access to digital public services for them.

Enhancing access through involving older users in the design of digital public services

In the context of Nordic welfare states, considering access and digital divides on the governance level, the goal is to provide accessible digital technologies for everyone, improve the inclusion of individuals in potentially vulnerable positions, facilitate the use of assistive technologies, and support digital skills (Hänninen, *et al.*, 2021b). To achieve these goals among older adults, design plays a crucial role in understanding the specific needs of older users. While promoting digital inclusion primarily focuses on accessibility, it is essential to note that a standard level of accessibility does not necessarily cater to the needs of older adults (Basakha, *et al.*, 2020; Ivan, *et al.*, 2020; Vilpponen, *et al.*, 2020). User involvement can be a solution to enhance access through collaboration between authorities, designers, and older adults (Bratteteig and Wagner, 2016; Jarke, 2019).

In design studies, several terms and concepts, such as participatory design, user-centered design, co-design, and co-creation, refer to participatory methods that engage end-users in the design. Often, these terms are used synonymously even though they all refer to specific ways of involving end users. Therefore, user involvement is used as an umbrella term covering several approaches with varying levels of involvement (Kujala, 2003; Fischer, *et al.*, 2020). In this study, we refer to user involvement as a process involving users throughout the design of digital public services and collaboration between service-users, service-deliverers, and service-producers (Sanders and Stappers, 2008; Osborne, *et al.*, 2016).

Since using digital public services involves information processing, it is crucial to recognize the changes in cognition that occur with aging when designing these services (Czaja and Lee, 2007). For instance, older people may encounter challenges with crowded Web sites, inconsistent operations, and error recovery. Additionally, older adults may struggle with icons, symbols, and unfamiliar keywords in learning new applications (Clement and Shade, 2000). On the other hand, older adults are often associated with stereotypes such as declining cognitive capacity, illness, and frailty (Mannheim, *et al.*, 2019). Therefore, there is a risk that the designer's preconceptions can affect the design process of digital services. Saariluoma, *et al.* (2016) argued that design should be based on the understanding of people's lives and the intended purpose of technology. Understanding the user needs can be achieved through human research and by user involvement, as it may provide information on the reasons for use and non-use, potentially leading to better outcomes in the design process. Especially, older adults want digital services that they find useful (Hanson, 2010).

In recent years, there has been a growing interest in user involvement to keep pace with digitalization, support citizens' inclusion, and create beneficial and user-friendly digital services (Bratteteig and Wagner, 2016; Jarke, 2019). Involving users in the design process often results in user-centric outcomes that build trust among authorities and stakeholders while satisfying users both functionally and qualitatively (Saariluoma, *et al.*, 2016). However, user involvement typically requires more financial resources than non-collaborative forms of design, which can explain why it is not as widely adopted (Bratteteig and Wagner, 2016). Older people can also feel that they do not have enough knowledge and skills to participate in the collaborative design process leading to an unpleasant rather than empowering experience (Holgersson and Karlsson, 2014). Ethical issues should also be considered as older adults might feel incapable or inadequate if they do not have the necessary skills to participate in the user involvement process (Lolich and Timonen, 2022). Additionally, research on involving older adults in the design of digital services in the public sector and the success of these projects is still sparse (Jarke, 2019). In particular, the oldest adults are often hard to reach, skewing the samples against the younger old with nominal digital skills. Furthermore, while user involvement is vital, it alone does not guarantee access to digital services or resolve issues related to digital inclusion. This idea was incorporated into the Access Rainbow Model, which presents that access to digital

public services operates on different levels (Clement and Shade, 2000).

Regarding access to digital public services, design plays a pivotal role in ensuring that they are beneficial for older people. Challenges related to skills and digital literacy on the second level of the digital divide persist, requiring users to possess strong digital skills, and the ability to navigate the digital society (Hänninen, *et al.*, 2021b). Also, due to social isolation, not everyone has social networks to support acquiring digital skills (Olsson and Viscovi, 2018). The easier digital services are to use, the easier it is for individuals to learn to use them (van Dijk, 2020). Digitalization continues to affect the third level digital divide, where the benefits and opportunities of technology and digital services accumulate for groups that already have good prerequisites for functioning in the digital society (Hänninen, *et al.*, 2021b). Therefore, it becomes crucial to acknowledge potentially more vulnerable groups and their needs when designing digital public services, promoting active engagement in digitalized society.

Older adults using digital public services in Finland

Drawing from the Access Rainbow Model, actions at the governance level should aim to support access to digital services. In terms of digitalization, Finland stands as one of the leading countries in Europe (European Commission, 2022). The Programme for the Promotion of Digitalization by the Finnish government explicitly aims to be a forerunner in digitalizing services, developing new high-quality digital services for citizens and offering a digital channel as a primary service for citizens (Finland. Ministry of Finance, 2022). Consequently, the Finnish public sector aims to build digital services with a focus on end-users (Finland. Ministry of Finance, 2023).

Digitalization is guided not only on a national level but also by the European Union which recognizes that older adults are potentially vulnerable in terms of digitalization of public services (European Union Agency for Fundamental Rights [FRA], 2023). To promote digital inclusion on an administrative level, the EU Web Accessibility Directive (Directive 2016/2102) was established by the European Parliament and Council to govern the provision of digital public services and obligate authorities to provide accessible services (European Union, 2016). In Finland, besides the directive on accessibility, the act on the provision of digital services (306/2019) guides providing good-quality digital services and obligates authorities to meet a minimum level of accessibility for public sector Web sites and mobile applications, along with monitoring their implementation (Finlex, 2019). Furthermore, this act urges public authorities to use a user-centered approach when designing digital public services, ensuring they are secure, accessible, easy to use, and tested with end-users. While it is essential to combine legal requirements with user needs when designing digital services, relying solely on guidelines is insufficient to accommodate the diverse needs of all older adults. Therefore, active participation by older adults in designing and developing digital services is essential (Czaja and Lee, 2007).

In this research, we define older people as aged over 65 which is a common retirement age. Being retired implies exclusion from the labor market which, in turn, means that older people may have challenges in catching up with new technology, maintaining digital skills, and integrating in digital society (Östlund, 2005). Indeed, age is one potential predictor for limited access and non-use of digital services even though older adults' technology adoption has been increasing recently (Francis, *et al.*, 2019; Friemel, 2016; Tsatsou, *et al.*, 2017).

A significant gap remains between age groups in utilizing digital public services, with older people using these services less frequently than younger age cohorts (Heponiemi, *et al.*, 2022; Xie, *et al.*, 2020). One reason for this may be that Finnish older adults find digital public services more challenging to use compared to younger generations (OSF, 2019b). Regarding the use of digital services in Finland in 2023, 70 percent of people aged 65–74 and 39 percent of citizens aged 75–89 have accessed information about oneself stored by public authorities or public services in the past 12 months. Similarly, 57 percent of 65–

74–year–olds have accessed general information about public services or services of authorities, such as benefits or opening hours, in the past 12 months, while 34 percent have done so in the older age group. Only 34 percent of 65–74–year–olds and 24 percent of 75–89–year–olds have made an appointment with a public authority or public service provider in the past 12 months. (OSF, 2024b)

Data and methods

The research data was collected in the "Digital Inclusiveness in Finland' project funded by the Finnish Prime Minister's Office between January and March 2021. The data was collected for a broader purpose, as the project aimed to create an understanding of digital participation and inclusion and to compile suggestions for how to measure and evaluate digital inclusion in Finland (see Hänninen, *et al.*, 2021b; Kuusisto, *et al.*, 2022). Given that the project sought to foster an understanding of digital inclusion, the interview questions primarily centered around digitalization and digital inclusion in general. Additionally, there was a section on older people's digital inclusion and the design of digital public services for and in collaboration with older adults. Given the diverse backgrounds of the interviewees, the concepts of user involvement and digital public services were broadly defined, allowing room for interviewees' interpretations. Consequently, they were free to define digital services in relation to their work or discuss digital services more broadly. Typically, interviewees referred to digital public services such as online banking and electronic identification, tax-related services, and social and health services.

The dataset consists of 20 semi-structured interviews, including three group interviews and 17 individual interviews. In the group interviews, two or three interviewees from the same organization participated. The interviewees, 16 of whom were female and 10 were male, were approached as representatives of their organizations and as experts in matters related to digitalization, digital inclusion, and older people. They held positions in local (six interviewees), regional (eight interviewees), state-level organizations (nine interviewees), and NGOs (five interviewees). All interviewees were of working age. The selection of interviewees was based on their job roles, where they were directly or indirectly involved in matters concerning older people, digitalization, and the design and development of digital services. Participants from the NGOs, in turn, collaborate with older adults and public organizations. In the results, interviewees' backgrounds are indicated using the abbreviations local-level (LL), regional-level (RL), state-level (SL), and non-governmental organization (NGO).

Due to the COVID-19 pandemic, the interviews were conducted via Microsoft Teams. All interviews were audio-recorded and transcribed. Participants were given pseudonyms to protect their identities. The research data comprise a total of 176 pages, with a focus on the design and development of digital services and older adults' digital inclusion.

The interview data were analyzed using data-led inductive thematic analysis (Clarke, *et al.*, 2015) in two phases. First, we examined discussions on access and designing digital public services from the interviewees' perspectives. Second, we explored in greater detail the ways that older adults were involved in those discussions according to the interviewees. In the analysis, three main themes were identified which will be discussed in greater detail in the following sections. The first theme explores the heterogeneity of older adults, while the second theme delves into the challenges associated with older adults' use of digital services. The third theme focuses on user involvement with older adults.

Results

Widely recognized and diverse needs

In the interviews, participants found that older adults form a diverse group of digital technology users with varying needs in terms of physical and mental health, digital skills, and overall situation in life for both technology and digital services. For instance, a person with reduced vision has different needs compared to someone with dementia. According to the interviewees, digital public services usually follow the principle "one size fits most," referring to services that support some assistive technologies and are available in plain language. As Elias (SL) explained, digital services are designed as "one size":

> It's the same thing with older adults, if you take a handful of 81-years-olds you get all different kinds of people with very different needs. So, as we both with Sanna [Elias' colleague] have told, probably the best we can do [in providing digital services] is just 'one size fits most'.

According to previous studies (Mannheim, *et al.*, 2019; Neves and Vetere, 2019), older adults are often described as a homogeneous group with declining cognitive and physical health and limitations in technology skills. These stereotypes can influence designers' thoughts and perspectives when designing digital services. Hanna (SL) had a similar view on the stereotypes, noting that the general conversation regarding older adults' technology use is often negative, portraying them as incapable of participating in the digital society. Although the heterogeneity of older people is recognized among most interviewees and research literature (Francis, *et al.*, 2019; Hänninen, *et al.*, 2023, 2022; Neves and Vetere, 2019), there remains a stereotypical assumption that most of them would have limited digital skills and a negative attitude toward digital technology, as Paula (NGO) pointed out:

> Often, older adults are described that they are all over 65 years old having the same exact needs and diversity, and heterogeneity is not acknowledged. And especially concerning technology, older adults are discussed in a really negative way.

To enhance access, digital services should be designed to accommodate the diverse backgrounds and needs of the people who use them (Clement and Shade, 2000). However, the challenge of meeting the varying needs of older adults and making them feel included in the digitalization process was emphasized by Leo (LL):

> I would like to see a campaign on the governance level on how to make digital [option] easy for older adults. There could be a tailored and easy digital channel for older adults to go through their matters whether it is news or private matters. Older adults can use teletext so it could be something like that. A digital channel with no buttons to give them a feeling that they are included in the spirit.

At the same time, however, it was evident that some older adults have good digital skills and are familiar with using digital services (also Quan-Haase, *et al.*, 2018). Interviewees emphasized the significance of motivation and argued that it is easier for older users to adopt digital services if they are interested in learning and using these services, even if their digital skills are limited. As previous research (Clement and Shade, 2000; Lafontaine and Sawchuck, 2015) suggested, older people may need to find a reason and feel a sense of meaning when using the Internet, or in this case, digital services. Paula (NGO) believed that addressing issues related to motivation and needs is essential to designing meaningful and useful digital services for older people:

> There should be much more consideration about the experience, needs and motivation, and stuff like that. In that

> way, understanding all service development and solutions could increase much more. Especially, understanding about older adults and other target groups would increase in society. And it is important to bring research knowledge into the general discussion.

According to the participants, digital support was often associated with older adults who were perceived to require more assistance compared to younger age groups. However, as pointed out by Jasper (LL), it is impractical to provide training or adequate support to all users of digital services. Therefore, many interviewees emphasized that digital services must be designed to accommodate the diverse needs of users and acknowledge the heterogeneity among them.

Rapid change and poor usability of digital public services

A significant issue with digital services, as highlighted by the interviewees, is their rapid rate of change. This can pose challenges for older adults, since they may require more time to learn how to use them. Digital services are frequently updated, and sometimes a single update can introduce a completely new interface, requiring users to relearn it from scratch. Additionally, the requirements for digital devices are constantly evolving, necessitating regular updates. Samuel (NGO) believed that, in the context of digital services, change is indeed the only constant:

> I think the challenge is that these services, like banking and public services, change so fast. It causes many challenges to older people as they have learned to use a system in a certain way and then it changes all new. The development of digital services is continuous, but it causes difficulties in using these services.

Commonly, interviewees were aware that many older people are trying to keep pace with the digitalizing society and that many older adults are concerned about the rapid rate of change. Additionally, Stella (SL) questioned to what extent it is feasible to include potentially vulnerable groups in the design when a majority of people can already use digital services:

> We have switched over to digital services because it is beneficial, fast, and practical for administration but how much have we done it at the expense of the user experience? I see the inequalities as the biggest problem, but it is balancing how much we can consider the more vulnerable groups and when the key focus should be on enabling access to the services in other ways for those whose skills are not sufficient.

Typically, interviewees considered digital services challenging to use, particularly for older adults. They mentioned poor usability, lack of user-friendliness, and complex interfaces as issues, which are also pointed out as obstacles to access by Clement and Shade (2000). According to the interviewees, digitalization was viewed as an improvement for managing tasks and active participation in society. However, there were also negative associations tied to the digitalization of society. From participants' perspectives, digital services were seen as efficient means for government to operate. Sometimes, this came at the expense of meeting the practical needs of users contradicting the purpose of providing services that offer the most direct utility in citizens' daily lives (Clement and Shade, 2000). As pointed out by Vilpponen, *et al.* (2020), another challenge lies in the fact that many digital services operate on different systems with no common interface. Olivia (NGO) identified the same problem with digital public services:

> The most used services are banking and health services, which are very important and personal to their users. Many of the

> front offices in banks have recently been shut down. A big challenge is that in health services, there are so many operating systems, every hospital district and municipality have their own systems.

As the interviewees pointed out, there are several issues associated with a rapid transformation into a digital society. These issues include difficulties in navigating different interfaces and challenges in providing adequate support and training for individuals whose digital skills may not meet the demands of digital society. When these problems arise, they hinder access to digital services and may deepen digital divides. Therefore, access should be viewed as a multifaceted concept (Clement and Shade, 2000) in which user involvement can help identify the diverse needs of users.

User involvement — A good, unimplemented practice

Interviewees recognized numerous challenges in designing digital public services. Typically, older adults were excluded from the design and development. In some instances, interviewees mentioned that the usability of digital services was tested by colleagues rather than actual end-users. While user involvement was acknowledged as a sound principle, it was not commonly put into practice. Given that governance plays a politically prominent role in ensuring access to individuals through decision-making (Clement and Shade, 2000), it appears that interviewees want to see more action taken to involve older people. Interviewees believed that there should be greater collaboration among various stakeholders and that older end-users should also participate in the design and development of digital services. Jasper (LL) elaborated on the common misunderstanding about the developers of digital services:

> They [older people] cannot be involved because we must remember that the municipality does not develop these services, it is a misunderstanding that we would have a group of coders on standby or that we as citizens could participate in the development and tell the coders to do like this so that it [digital service] is then easy to use. Almost 99 percent of the service development is done by software houses and I think that they should involve people in the development more.

As digital services have evolved into large-scale projects that require multidisciplinary information systems, the need for widespread expertise in designing digital services is undeniable. Digital public services are procured by local, regional, and state-level public authorities, then designed and developed by private software houses through contracts with the public sector. Nevertheless, there is often a lack of resources and knowledge in acquiring digital services (also Vilpponen, 2021) as Stella (SL) pointed out:

> I think that there are many rigid formalities at the administration level and the big challenge is that we don't have enough competence to commission digital services. We cannot define what we want or pronounce it to the service producers because it isn't included in our expertise in public administration.

One important way to establish access and create meaningful interactions is to understand the specific needs of the people that one is collaborating with (Lafontaine and Sawchuck, 2015). However, another recurring challenge highlighted in several interviews was the uncertainty surrounding the responsibility for involving end-users in the design process, which is typically assigned to software houses. It remains unclear to what extent software houses actually engage older adults in designing digital services, leaving the question of responsibility unresolved. Erik (SL) expressed hope that developers and designers would actively involve end-users while also suggesting that government and authorities should conduct more rigorous examinations of the design of digital services:

]

> It is even more concerning that some people think that digitalization is not for them. I think it is important that the administration and authorities look at themselves in the mirror here. Of course, the starting point should be that services that older adults are expected to use, or that they use, are designed so that older people feel they know how to use them.

Accessibility was regarded as a potential solution to many problems associated with the design of digital services. Typically, ministries and municipalities procure digital services from software houses responsible for their design, development, and implementation. The interviewees emphasized that accessibility should be a requirement for digital services, benefiting not only older adults but all users. To achieve accessibility, digital services should adhere to the accessibility standards specified in the EU Web Accessibility Directive (Directive 2016/2102). The standards are designed to support the use of assistive technologies, enhance Web content comprehensibility, ensure ease of use, and compatibility with various devices (World Wide Web Consortium [W3C], 2023). However, Erik (SL) pointed out that there were variations in how accessibility was interpreted within administration and software houses. According to Maria (SL), accessibility was perceived as a separate tool for improving digital services, with digital inclusion not always considered in a broader context:

> Some measures have been taken [to support digital inclusion]. Yet some of the arrangements have surely been made so that digital inclusion is not considered as a whole but mainly as, for instance, increasing accessibility. I would dare to say that also we start with individual measures that together form digital inclusion and from the perspective of digital inclusion as a wider picture there haven't been measures taken.

As mentioned earlier, interviewees linked heterogeneity to older adults. On the contrary, however, as Elias (SL) said, in the design of digital public services, the best solution that authorities can provide, is "one size fits most". According to the interviewees, including Samuel (NGO), digital services are typically designed with an "average user" in mind, which often refers to someone with proficient skills and prior knowledge of how to use various digital services:

> I feel that digital services are designed for people who have good digital skills. It is often forgotten that services are also used by seniors and different language groups. But usually, the services are designed for people who already have good skills.

However, the interviewees found it difficult to reach all user groups. Mia (SL), for example, was worried that access mainly touches people who are already active in their lives and that older adults remain absent in the design of digital services, statistics, and research. On the other hand, Hanna (SL) had positive experiences involving older adults in the design process of digital services, and she felt that they were happy and eager to take part. This is recognized in previous research as well (Merkel and Kucharski, 2019) since acceptance, usage, and effectiveness were considered in the design.

As the examples above show, different stakeholders had different information about designing digital services. In NGOs, there was usually more knowledge about the role of older adults in the design of digital services because they pursued older adults' interests and were working directly with older adults and various stakeholders, as Paula (NGO) explained:

> We interact directly with older adults, and it is a guiding element in all the work we do. We bring the voices,

> experiences, needs, and motivations of older adults to be heard, and bring them as a part of product, device and service development. One of our key activities is to connect different actors and networks.

However, there seems to be a lack of collaboration between different stakeholders, which can compartmentalize the distribution of information in the design, as recognized in previous research (Lolich and Timonen, 2021). For instance, workers in NGOs may have knowledge gained through digital support for older adults, but this knowledge is not utilized in the design of digital services. In some cases, there was collaboration between different stakeholders. Paula (NGO), for example, explained that involving older adults and collaboration between them, developers, and designers was fruitful and offered new insights for both parties. On the other hand, as Maria (SL) stated, the public sector deals mainly with strategies and manages digitalization on a macro level. Therefore, collaboration with older adults is necessary not only in the design and development of digital services but also between the NGOs, public sectors, and design experts to implement the good principles in practice.

Discussion and conclusion

The findings of this study underscore the relationship between the potential barriers experienced by older adults accessing digital services and designing these services from the perspectives of stakeholders on the service-delivery side. First, we asked what the typical challenges for older adults are accessing digital public services according to the stakeholders. Despite stakeholders recognized the heterogeneity among older adults, their diverse needs posed a challenge for designing digital services and integrating these needs into design practices. This suggests that the utility of these services may not meet the requirements of older users. Additionally, as most citizens are already confident in using digital services, the interviewees questioned how many resources could be allocated to support the access of a specific user group, such as older adults. This perspective is interesting in the context of digital services, per Finnish legislation (Finlex, 2019), and guidelines in the European Union (FRA, 2023), as access to these services is a fundamental right and the services should be offered to all citizens in a usable form, irrespective of their level of digital skills.

Even though digital public services should be secure, accessible, and user-friendly, ensuring this can be problematic, as accessibility and the user-centric approach can be understood differently depending on the stakeholder's point of view. Reflecting on the Access Rainbow Model (Clement and Shade, 2000), these issues seem to arise as the focus shifts to different levels of access depending on the stakeholder, rather than viewing access as a unified concept. Additionally, despite a shift in recent years from an administration-centric view to a user-centric approach in the development of digital public services (Kubicek, *et al.*, 2019), interviewees mentioned that digital services are still primarily designed to serve the needs of the government, rather than the user. As a critical insight, especially the accelerating pace of digitalization was problematic as older adults may face challenges in adapting to fast changing digital services. A 'one size fits most' approach was seen as the most attainable outcome to meet the needs of various users at present. This calls more attention to the ways in which decisions are made by the government to ensure access to digital public services for older people.

Second, we explored how stakeholders view the involvement of older adults in designing digital public services. Governance guides the design and development of digital public services through funding, and these services are required to adhere to accessibility and data protection guidelines. Currently, the emphasis appears to be primarily on supporting technical aspects, such as the accessibility of digital public services. However, there is a need for policy-making to consider the social aspects of access, such as the role of developers in facilitating access through designing digital public services. If users are involved in designing digital public services, the approach should be carefully defined so that public authorities commissioning digital services can incorporate user involvement as a part of the development process. Concerning Access

Rainbow Model (Clement and Shade, 2000), the results of this study indicate that more collaboration, support, and continued involvement of stakeholders are needed throughout the acquisition, design, and implementation of digital services.

In conclusion, our analysis highlights the role of governance in acquiring and designing digital public services. Drawing from digital divide approaches and the Access Rainbow Model, everyone should have an opportunity to benefit from the advantages of digital services, regardless of specific access needs some users may have (Clement and Shade, 2000; van Dijk, 2020). It is essential to ensure that access to services is carefully considered at all levels of the Access Rainbow, including the social and technical aspects, instead of excessively focusing on separate actions, such as accessibility or digital support. Although the rainbow, as a metaphor, signifies unity and diversity simultaneously (Clement and Shade, 2000), designing digital services that accommodate all the different needs of various users and involving stakeholders from the beginning to the completion remains challenging.

As this study advances the understanding of the responsibilities of acquiring, designing, and developing digital public services on different administrative levels, we note that it also has limitations. First, most interviewees were not directly working with matters concerning the procurement or design of digital public services. Therefore, their knowledge about the design process was on a more general level even though earlier research findings support the results of this study. Additionally, in group interviews, participants' responses may have been influenced by the presence of their co-workers. Second, this study utilizes Finland as a specific example to shed light on access and user involvement in digital public services. Third, older adults were not involved in the study design. Even though this study focused on the perspectives from service-delivery side, research is needed on older adults' experiences as well. Considering the design of digital services, older adults have characteristics that should be taken into consideration, and therefore, more research is needed on involving older users in the design and development. Stakeholders' different perspectives on the design and development of digital services show how complex it is to create digital services that would follow the legislation, fulfill administrative purposes, and meet the needs of users. In the future, more research is needed on evaluating the outcomes of collaborative design projects and their implications on older adults' well-being and digital inclusion. FM

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