

# Volunteer-based IT Helpdesks as Ambiguous Quasi-Public Services - a Case Study from Two Nordic Countries

Volunteer-based IT Helpdesks as Ambiguous Quasi-Public Services

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In this case study we take a Nordic perspective on the tension between increased digitalisation of public services and the insufficient support for citizens with limited digital literacy. Volunteer-based IT helpdesk services in public libraries have emerged as an attempt to address this tension. Drawing on examples of volunteering in public library-based IT helpdesk services in two Nordic countries, this paper considers the IT helpdesks as quasi-public services. Based on interviews, observations and workshops, we explore: the work of IT helpdesk volunteers, the characteristics of helpdesk services offered, and the implications of these services being offered by volunteers. The services offered are of acceptable quality to the users while the ambiguity and lack of institutional support is making the service fragile. In spite of the challenges of the quasi-public IT helpdesk service we also note how it offers a potential platform for the co-design and support of new public services.

**CCS CONCEPTS** •Social and professional topics~Computing / technology policy~Government technology policy•Human-centered computing~Interaction design~Interaction design process and methods~Participatory design

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\* The first two authors have shared first authorship of the paper.

**Additional Keywords and Phrases:** Digitalisation, Public Digital Services, Volunteering, Participation, Participatory Design

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## 1 Introduction

In this paper we uncover and elaborate the tension between the challenges presented by the continuously increasing public digitalisation and the unclear or insufficient support for citizens with limited digital literacy. The push towards a 'digital society' and the transformation of the public sector through digitalisation means that citizen-government interaction is expected to take place digitally [47]. This has created a form of inequality that has been described as a 'digital divide' [4,42], leading to social exclusion as many citizens lack the skills needed to use digital public services. For example, in Denmark it is estimated that 17-22% of the population are digitally challenged, meaning that they are either exempted from using the now ubiquitous public digital mail service or they are considered digitally competent but need some level of support [17]. A recent report on digital competency puts Finland as the highest ranked EU country in terms of digital literacy with 76% of the population having 'basic digital skills', yet this leaves nearly a quarter of the population with limited digital skills [21]. This growing 'digital inequality' creates challenges in the Nordic welfare societies, who are otherwise often regarded as being at the forefront of public sector digitalisation with unconstrained public access to Internet [17]. Plausible reasons for exclusion include limited digital literacy, poor access to services, or negative attitude towards digital services [30], and among elderly citizens, lack of interest, or confidence in using IT systems [54]. However, the reasons for digital inequality are not only to be found on the user side, but potentially also on the supplier side, in the way these services are designed and developed. For example, some research has shown that failure in public e-services is often due to lack of user involvement in service development [44]. Another potential issue is a weak focus on usability in public e-service development at the concrete level [20]. Furthermore, a more recent study reports that even though emphasis was put on improving the user experience of the Norwegian Tax Authorities' digital services for prepaid tax, the overall enhanced user experience did not limit requests for assistance caused by the overall complexity of the tax system [28]. To summarize, the digitalisation of public services creates a strong asymmetrical relationship between citizens and service providers [37]. This highlights the importance of publicly available support in using public digital services, which is the focus of our paper.

In organisations, the need for help with IT has usually been addressed through professional IT helpdesk support [22]. Different helpdesk solutions have also been used by the public sector, with call centers or dedicated public offices assisting citizens with their public digital service needs [3]. In the Nordic countries, IT helpdesks staffed by volunteers have emerged during the past decades, both through public and nonprofit initiatives, to support citizens in using IT and digital services. In many cases these volunteer-manned IT helpdesks have operated from public libraries. We identify two broad changes in society that have bearing on the emergence of this new type of IT helpdesks. First, the role of public libraries has changed in the face of digitalisation, and their focus has expanded from distributing knowledge through books and other media to also include addressing digitalisation; providing general IT access to the public, offering for example makerspaces, where visitors can explore digital technologies [62], and offering IT support. This is in keeping with the public libraries' fundamental values of democracy, participation, and learning [32]. Second, the public sector is increasingly interested in the role of volunteers as part of service co-creation [15,29,55], and the expertise of seniors is considered an asset for municipality activities [41] while providing seniors with an opportunity for socializing and societal contribution.

In our study we focus on volunteer-based IT help support in public libraries in two Nordic countries. Earlier HCI research has highlighted several related areas, for example: the practices of volunteers with IT (Bødker et al. [9]); public

libraries as context for participation in the design of technology (Dalsgaard et al. [16], and Serholt et al. [52]); and the challenges of developing digital public services (Runardotter et al. [48]). However, volunteer-based IT helpdesks as a service in public libraries is a recent phenomenon that has received little attention. It is a service that differs from both traditional professional IT support provided in organisations and community-based peer support in that it relies on citizen-based volunteer action that takes place in a space provided by the public sector. The volunteer action is also recognised by the public authorities who explicitly rely on it to solve some of the challenges of digital inclusion – challenges that are a consequence of strategic decisions taken by governments to digitalise public services; a move especially apparent in Nordic countries. Our exploration of two volunteer-based IT helpdesks in public libraries in Denmark and Finland respectively, was guided by two research questions 1) How do the volunteer-based IT helpdesk services in the libraries work, and what are challenges encountered? 2) What are the implications of relying on volunteering to address challenges of public digitalisation? Our results show that those seeking help (mainly seniors) are satisfied with the service provided by the volunteers, despite them not being trained as professional IT help providers. The nature of the service remains nonetheless ambiguous and we refer to it as a quasi-public service as it is provided by volunteers but relies on public infrastructure and services (public libraries) for its delivery.

## 2 Related Work

In the following, we present previous research related to the provision of help with IT as it takes place in formal organisations and informal community settings. We also consider approaches to participation in the design of public digital services and volunteering as a form of civic participation. This forms our theoretical framework for understanding how volunteer-based IT helpdesks offer support for citizens and what the implications of this model may be.

### 2.1 The provision of IT support

In larger organisations there is a long-standing practice of offering IT support through helpdesks both for new users as well as when introducing new technologies [22]. These IT helpdesks may also engage in procurement of new services to ensure acceptable usability. Another path to IT support is offered by peers in communities of practice, either in organisations or informal settings, which constitutes situated learning [36]. The concepts of participation and community-of-practice are central in situated learning. In short, a Community-of-Practice (CoP) is essentially the social context that holds a knowledge tradition together. Any form of participation in a CoP changes the participating individual and is therefore a kind of learning. There are different degrees of participation, and a full participation of a CoP masters the rule-following that constitutes the specific practice. This position can only be achieved through following a trajectory through different degrees of participation, starting in the periphery of a CoP with what Lave & Wenger calls 'legitimate peripheral participation' [36]. The radical social-constructivist position embedded in this theory is that all learning is situated, and consequently learning can only happen through participation in a CoP. However, Wenger et al. have also identified the role of the "digital steward" as "people with enough experience of the workings of a community to understand its technology needs, and enough experience with technology to take leadership in addressing those needs [57]. Stewardship typically includes selecting and configuring technology, as well as supporting its use in the practice of the community." [57]. Additionally, the sub-field of Community Informatics (CI) has aimed at understanding digitalisation from a community perspective. CI applies information and communications technology (ICT) to enable and empower community processes and makes new modes of governance, self-organisation and self-management possible [24].

In later years, a third option for IT support has emerged, partly as a response to the digitalisation of public services: IT support provided in public libraries. According to Gustafsson and Wihlborg [25], public libraries have 'a central function in the building of democratic and inclusive societies and are being increasingly relied upon by governments to *'deliver access and support for digital services'* [25]. Runardotter et al. [48] report on a study of the digital divide in rural Swedish areas, where the public libraries are identified as a place where citizens turn to get help with IT. They point to the fact that these IT challenges are imposed from other organisations, like the government or banks, but they end up being solved at a local level. This is a problem, because we see that the IT support in public libraries is delivered either by librarians or volunteers without formal training in IT support. Consequently, this service does not fit into the category

of professional IT helpdesk support and neither can it be described as provided by peers in a community of practice. Rather, the IT support provided in public libraries by volunteers that we study in this paper demonstrates other characteristics that we elaborate on in our results.

## 2.2 Participation in the design of public digital services

Challenges in the use of IT is not only addressed by the provision of help and guidance but through the involvement of users in the design process of new tools and services. Historically this has been explored in fields like Participatory Design (PD) and more recently with approaches such as co-creation or co-production of digital services. PD emerged in the Scandinavia in the 1970's at a time where information systems were being introduced by top management to many workplaces. One of the key aims introduced in early PD was to empower users by giving them a say in these technological choices [53]. Despite this historical interest in the democratisation of IT, the notion of participation has only been broadly defined in PD literature [26] and can refer to for example workers involvement in workplace ICT development [8], social innovation [7], and being informed about a change decided elsewhere [59]. PD has also been described through its values, such as equal participation, mutual learning, empowerment, and democratisation [13,53]. Looking at design more broadly, different taxonomies have been developed for describing levels of participant engagement and how participation in design processes develops over time. A classic taxonomy is the eight step 'Ladder of Citizen Participation', going from manipulation to citizen control [2]. A more recent taxonomy describes the different intensities of user engagement in design, encompassing use-as-is, active use, user design, and user innovation across both individual and collective aspects of design [34]. Others have discussed the different roles of participants in PD processes and how these roles can shape both the process and its outcomes [1,23]. However, these well-structured taxonomies do not fully encompass the messiness and ambiguity of citizen participation in many real-world contexts where participation evolves over time and space [12], and across different matters of concerns [49].

With the increasing digitalisation of the last two decades, the relationship between participation, design, and IT has shifted to address participation in the design of digital services. Within PD, the participation of different stakeholders in the design of digital public services has been reported on, for example, parental leave planning [10], elderly and digitalisation [56], and other forms of citizen-municipality interactions [11,35,50]. Work by Dittrich et al. have also examined participatory aspects of designing e-government services for municipalities [19]. In the fields of service design, terminologies such as co-design, co-creation and co-production – often used interchangeably [33,43] are being used to refer to forms of service user-provider collaborations. This includes the exploration of the participation of citizens in the shaping of public services [51], leading to suggestions for considering the public sector as an arena for service co-creation [55]. Dalsgaard et al. [16] and Serholt et al. [52] have for example explored the co-construction of knowledge as well as the co-creation of events with new technologies, in the context of public libraries.

## 2.3 Volunteering as Civic Participation

Volunteering can entail activities that are more informal and less organised [45] or an act performed under the umbrella of registered associations. According to Hustinx et al. [31] volunteering is defined as free labour offered willingly through a formal agency, while noting that the purity of these criteria may vary, for example if the volunteers have their expenses covered or not. Wilson [58] promotes a broader view on volunteering, as providing work and services for free also outside of an organisational context. Wilson [58] also notes that volunteering is proactive rather than reactive by nature, making it a planned effort. In this paper we consider volunteering as an activity provided in an organisational context rather than personal time and efforts that willingly and independently are shared or provided for free at a personal level – including grandparents babysitting their grandchildren, adult children providing care-services for their aging parents, or knowledge-sharing in a community [8,9,11,12].

According to McPhail et al. [38], a volunteer organisation has no claim on their staff members, and to maintain their workforce they need to not only assist staff in their work, but also provide a sufficiently positive experience to ensure long term commitment. Also, there was a higher degree of congruity between personal and organisational goals in the volunteer environment they studied, compared to profit-based organisations [31]. Volunteering also preserves status

quo in contrast to activism which seeks social change [31]. Further, volunteering has also proven beneficial, not only for the recipients but also for the providing volunteers, and improved physical and mental health has been reported for seniors engaging in volunteering [5, 27]. It is therefore not only a way of keeping seniors engaged with society but also leads to public health benefits. While volunteering comes with many and multi-layered benefits, there are also challenges. Haski-Leventhal and Bargal [27] observe that volunteers generally lack formal training and learn their tasks through peer learning or on the job. According to Cnaan & Cascio [14], while the volunteers offer free labour, this indicates that they cannot be held to the same standards as paid labour. For example, volunteers can show limited loyalty to the organisation where they volunteer and as the volunteers are not dependent on a salary they can also move more freely in and out of volunteering. Hustinx et al. [31] also critique volunteering as a phenomenon as it may promote a neoliberal agenda, where public services now covered by volunteers can be withdrawn. Volunteering may also re-affirm existing inequalities due to how the wealthy and highly educated are more likely to volunteer and therefore maintain the existing system, rather than seek social change [31]. Volunteering is a complex endeavour, and while actors share a similar goal, working well together often requires an effort.

### 3 Case Description

Denmark and Finland are among the nations with the highest levels of digitalisation in the world, they also both have large public library networks, and they share some of the challenges of an ageing population that needs support accessing a wide range of digital services. In both countries public libraries have played an important role in supporting public service digitalisation. Today the public library is not only a place to access information or borrow books, but an arena where the visitor has an opportunity to experience and learn new things, participate in public debate and express oneself [62]. Libraries attract many and diverse visitors; including groups that are affected by the digital divide, for example older adults and immigrants [46]. Below we will first briefly introduce the two case sites, A) the IT helpdesk at a Finnish library, and B) the IT helpdesk at a Danish library. These two IT helpdesks are relatively similar in their demographics, with the exception of their gender distribution of the volunteers (Table 1). A difference is also that Finnish public libraries are required by law to provide IT support while in Denmark libraries are not. In the following we describe each of the IT helpdesks and expand on the differences in government policy and organisation.

**Table 1: Volunteer age and gender distribution at the local sites**

	Volunteer group	Under 70	71-80	80+	Unknown age	Male	Female
IT helpdesk Finland	NGO FI	28%	51%	11%	10%	55%	45%
IT helpdesk Denmark	NGO DK	27%	60%	13%		73%	27%
	Library DK	36%	46%	18%		73 %	27 %

#### 3.1 The IT Helpdesk in Finland

All IT helpdesk services offered in the Finnish Municipality are coordinated by the city Executive Office, whose overarching strategy involves planning and coordinating various services as well as offering training for both professionals and volunteers. In providing helpdesk services, the city collaborates with other organisations such as Finnish NGOs, local associations, and senior organisations alongside their own IT helpdesk services. However, there is a lack of clarity among the actors, both in understanding and in how they communicate what services are being offered and where, leading to citizens being sent to the library for help with issues outside the scope of the services offered. The IT help for seniors in the Finnish municipality is organised by an NGO that has been working with digital peer support for seniors for over 20 years. Throughout this time, they have been working closely with the local libraries and have grown to have over two hundred volunteers, all of whom are retirees. They also have three full-time employees, but

the organisation is managed by a board of volunteers. Most IT helpdesk activities are facilitated through the local libraries, which handle booking and provide space for the NGO. Beyond offering IT helpdesk services for fellow seniors, they offer lectures on computer usage, as well as organise study groups on more advanced software such as audio and video editing. Occasionally they also participate in user research for companies, especially banks, when they are developing new digital services. The NGO itself is well organised and engaged with various local networks that work with digitalisation.

## **3.2 The IT Helpdesk in Denmark**

The current setup of the IT helpdesk in the Danish library consists of two groups of volunteers – one being affiliated with the library and the other to a Danish NGO. Until recently the two organisations offered their own separate IT helpdesks, but due to changes in their physical location provided by the municipality, they are now co-located in a newly opened community building administrated by the local library. This physical move led to the two organisations sharing the space and responsibility to provide IT helpdesk services, where the two organisations have split the timeslots for IT support between them. The IT helpdesk is open every weekday and is staffed by volunteers, who are all seniors. The library established their IT helpdesk already in the middle of the 90's, and according to the NGO's local coordinator, they have offered their service for more than 13 years. In Denmark, citizens also have the option to visit the municipality's Citizen Service Centre to get IT support. This service does not collaborate directly with the library IT helpdesk, and they lack a clear distribution of responsibility. Furthermore, citizens can also visit their bank or the shop where they have bought their device to ask for IT support.

## **3.3 Case Differences in Government Policy and Organisation**

While the two locations share significant similarities, there are also differences. A key difference is government policy. Finnish library law [40] includes the following objectives for the Finnish public libraries: “create equal opportunities for everyone to access education and culture”, “promote information availability and use”, and lay foundations for “active citizenship, democracy and freedom of expression.” This means the Finnish libraries are required by law to offer guidance and advice in using technology, but their interpretation suggests that they are not required to offer support with using specific services but only with the devices themselves. In Denmark there is no law requiring the library to offer IT helpdesk services, but the strategy of the library studied in this case mentions that they will “Support citizens in mastering new information technologies”. Another key difference is how the volunteer organisations are structured. The Finnish volunteers are largely self-organised but has full-time employees managing the organisation and handling the contacts with the local library, while the Danish IT helpdesk is staffed by either volunteers from the volunteer-led NGO or volunteers managed directly by a library employee.

# **4 Methods and data**

The research reported in this paper has been conducted as an explorative case study of the volunteer-based IT helpdesk service at two local libraries in Denmark and Finland between February 2021 and February 2022. By investigating these two separate IT helpdesks we juxtapose findings across Denmark and Finland to identify similarities and differences in IT helpdesk organisation and practice and provide a situated Nordic perspective on public digitalisation and volunteering. We follow a case study approach aligning with Yin [61] where the scope of our study has been defined by the activities and resources available, something that especially became important during the Covid-19 lockdowns.

## **4.1 Data Collection**

From our early interactions with our two partner libraries in Finland and Denmark it became clear that their volunteer-based IT helpdesk services played a significant role for local seniors who were challenged by the increasing digitalisation of public services. At the same time, we could see that the services were based on a group of motivated and dedicated volunteers, and we were interested in better understanding what activities took place in these IT helpdesks. Our data

collection was guided by the following research questions 1) How do the volunteer-based IT helpdesk services in the libraries work, and what are challenges encountered? 2) What are the implications of relying on volunteering to address challenges of public digitalisation?

To build an understanding of the IT helpdesk services and address our research questions, we planned a data collection process relying on mixed qualitative methods in Denmark and in Finland. The data collection process was shaped by the Covid-19 regulations in Denmark and Finland, resulting in some differences in the possibilities of in-situ observations, face-to-face interviews, participation in meetings and workshops which were possible in Denmark, but not in Finland where the libraries remained closed to the public during the data collection period. Interviews were conducted online in Finland while the workshop was conducted in person. Tables 2 and 3 relay the extent of our ethnographic data gathering in each location. Additionally, we have also conducted desktop research about public digitalisation, volunteer organisations, and library strategies. Unless explicitly stated in the two tables all encounters were recorded on either video or audio, and supplementary notes were also taken at each encounter.

In our data the Danish case appears richer with stronger opinions, in contrast to the Finnish volunteers that appear more at peace with the current situation. While this may indicate that the IT helpdesk in Finland is better organised, it is also worth noting that the Finnish participants were interviewed in English (with Finnish and Swedish language support) and that the participants were recruited via the NGO, which may have a bias towards presenting their members as more skilful or satisfied. In Denmark all activities were undertaken in the Danish language.

**Table 2: Research data, Finland**

Encounters	Participants	Duration	Location	Organisation	Data generated
Interview x 6	1 x Senior association CEO, 2 x coordinator, 3 x volunteer	40 - 90 min	Online	Finnish NGO	
Interview x 3	1 x Pedagogical Information Specialist, 1 x Special Librarian, 1 x digital guidance coordinator	50 - 80 min	Online	Finnish library	
Interview	Startup CEO	60 min	Online	Startup	
Mapping Workshop	4 x Finnish volunteers, 2 x library workers, and 1 x Finnish NGO employee	180 min	Finnish library	Finnish NGO and Finnish library	An additional workshop artifact was created
Interview	Executive Office	100 min	Finnish library	Finnish municipality	

**Table 3: Research data, Denmark**

Encounter	Participants	Duration	Location	Organisation	Data generated
Interview	Digitalisation manager and Strategy developer	90 min	Online	Danish library	
Meetings x 3	2 x Coordinator, 1 x IT 'hands on' employee	2x 30 min, 1 x 60 min	Online	Danish library	Notes only
Survey	Six volunteers	N/A	Online	Danish library	Survey results summarized on slides.
Observations	Volunteers and both coordinators	60 min	Library community house	Danish library and Danish NGO	Only notes and photos.
Group interview	Three volunteers and the coordinator	90 min	Library	Danish library	
Observations x 2	2 x Two volunteers and citizens	150 min	IT Help at the library	Danish library	Also photos
Interviews	Two volunteers and citizens	120 min	IT Help at the library community house	Danish library	Also photos

Encounter	Participants	Duration	Location	Organisation	Data generated
Interview	Coordinator	60 min	Library community house	Danish NGO	
Group interview	1 manager and 1 employee	90 min	Citizen service centre	Danish municipality	Also photos
Mapping Workshop	3 volunteers	180 min	Library community house	Danish library	Also photos
Observations	Volunteers and coordinator from library	60 min	Library community house	Danish library and Danish NGO	Notes only
Meeting	Both coordinators	60 min	Library community house	Danish library and Danish NGO	Notes only
Observations and presentation	Volunteers and both coordinators	90 min	Library community house	Danish library and Danish NGO	Also photos

## 4.2 Data Analysis

The analytical processing of the empirical data was an iterative process, where the data was initially analysed during the year of the data collection. We looked at the empirical material from a service perspective due to sensing a lack of clarity in terms of how the service was delivered and how we would characterise the IT helpdesk service.

The analytical process was initiated with the first two authors conducting a thematic analysis of the data in an iterative process [60] mainly relying on field notes and observations across the two sites (See Tables 2 and 3). We regularly presented and discussed findings internally throughout the entire fieldwork period. The result of this process was a first version of the empirical themes describing the work of the volunteers at IT helpdesk services (See section 5), it also allowed us to adjust our data collection efforts to elaborate on specific themes we found interesting. These themes included the motivation and practices of the volunteers as well as challenges in the organisational setup, which we found to be key themes in understanding how the IT helpdesk services work. These themes were for example further explored through the design and facilitation of similar mapping workshops with the Finnish and Danish volunteers.

After finishing the fieldwork, three of the six authors performed a second round of analysis, where the themes from the initial analysis created a structure to build upon. First each researcher read through the material and identified key themes related to the work of the volunteers, the type of service provided and experienced, and the challenges at hand. Subsequently all material was collected and incorporated to overcome biases and pre-understandings across researchers. The next step was to collaboratively analyse the empirical findings to answer our second research question. This resulted in three aggregated themes (See 6.1, 6.2 and 6.3) that identify the ambiguous service of the IT helpdesks as a quasi-public service.

## 5 Empirical findings - The Work of the Volunteers at the IT Helpdesks

In the following we describe the work volunteers at the IT helpdesk services through empirical themes identified in our data collection and analysis.

### 5.1 Social Skills are Equally Important to Technical Skills

The participation of the volunteers in the IT helpdesk service differs depending on the volunteers' technical and social skills. Our initial thought was that technical skills would be key in IT helpdesk service, but we have learnt that the social skills of the volunteers are considered equally, or even more, important by the volunteers. During our workshops in both Finland and Denmark, we inquired about the skills needed for a volunteer at the IT helpdesk. One volunteer in Denmark wrote: '*Patience, social skills, and a little bit of IT knowledge*', which all volunteers could agree to. Similar views were identified in the workshop in Finland where the volunteers referred to the most important skills to be soft skills, small talk, and understanding the seniors. The Finnish volunteers also stated both in interviews and during the workshop that as seniors themselves they are more capable of supporting their fellow seniors than others would be. Volunteers across the



two sites expressed that volunteering at the IT helpdesk allows them to keep up with their skills, however, the volunteers also seem to be aware of their own limitations. Some volunteers feel more comfortable supporting problems on the computer, while others are more skilled with mobile phones, and they also seem to make a clear distinction between how skilled they are across PC/Mac and Android/iPhone. Based on our fieldwork we have identified three categories of problems the users experience, which include 1) the digital service, 2) the physical device, and 3) the official language used in public services and the related legislation. This illustrates that the support needed is not only limited to technical skills. However, none of the organisations offer their volunteers continuous training in either technical or social skills, although the Finnish organisation requires the volunteers to participate in an orientation session with a volunteer coordinator. The Finnish organisation also have a mentorship programme where experienced volunteers support new volunteers.

## **5.2 The Volunteers are Motivated by Helping, Socialising and Feeling Acknowledged**

Contrary to previous studies [14], the volunteers in our study are very loyal, and many have been volunteering at the IT helpdesk for more than 10 years. This resonates with McPhail et al. [38] who found a higher degree of congruity between personal and organisational goals in the volunteer environment they studied, compared to profit-based organisations. Consequently, we wanted to understand what drives these senior citizens in their volunteer work. The volunteers describe their motivation as two-fold: on the one hand they enjoy helping the users, on the other hand they also like to stay active and socialise with other volunteers. This supports previous findings in literature that volunteering has proven beneficial, not only for the recipients but also for the providing volunteers by promoting the mental and physical health of seniors [5]. Our empirical findings have uncovered a third aspect of the volunteers' motivation, which relates to the feeling of being acknowledged. The acknowledgement is expressed in different ways at the two sites, but the key outcome is to make the volunteers feel that their work is appreciated. In Finland the volunteers experience the appreciation indirectly from the municipality because the IT helpdesk service is integrated as part of the digitalisation strategy of the city. This is not the case at the Danish municipality, where the volunteers value other signs of appreciations such as the municipality inviting to free volunteer events with lunch or when the coordinator drops by the IT helpdesk during opening hours. It is important to note that the absence of this acknowledgement can result in the volunteers feeling de-motivated. This has been the case in Denmark where the volunteers used to have free access to the library's coffee machine; they even had their own coffee card. After moving to the new building, they now need to make the coffee themselves in the kitchen, and it is no longer perceived as an exclusive benefit.

## **5.3 Knowledge Sharing is Limited Between Volunteers**

In the current practice, knowledge-sharing between volunteers is limited. While it is not uncommon that volunteers experience similar challenges, for example not knowing a specific solution or not knowing an effective way of communicating the solution, the volunteers do not systematically document their solutions or share their knowledge with a larger group of volunteers, similar to other accounts in other volunteering contexts [11]. At the Danish site the volunteers from the library and the Danish NGO association are divided into small teams of two or three for each shift at the IT helpdesk. When it is quiet during opening hours the volunteers get an opportunity to share knowledge or perhaps look up problems together online. Sometimes they also follow each other's session with users to learn from each other. They describe the knowledge sharing in their own team as very valuable. However, when it comes to sharing knowledge across all volunteers it has not been frequent or systematic in Denmark. Here the knowledge sharing sessions are referred to as something initiated by the coordinators, which used to take place two to three times per year, but after the merger of the two organisations they have started to meet monthly. The volunteers can see the benefits of meeting more often to share knowledge about how to solve specific problems. One volunteer has addressed this challenge by creating his own database on a USB key to save problems and solutions he has come across. He describes how he has sometimes needed to research the problem at home, he then prints a copy of the material and brings it to the IT helpdesk to share the knowledge, but it does not go any further than the local team.

## 5.4 The Users are Satisfied with the Level of Support in the IT Helpdesk

Based on our observations in Denmark the service quality provided by the IT helpdesk appears quite limited, but it seems to be sufficient for the users, who are very satisfied. In some cases, the information communicated is not completely accurate, but the service rendered is good enough for the users. We believe this discrepancy can be explained by the fact that the users seeking support from the IT helpdesk have limited knowledge about the identified problem and possible solutions. For example, we observed a woman at the Danish site that needed help printing 5 copies of a document in her e-mail inbox. After 1,5 hours of support from one volunteer she ends up receiving 4 of out the 5 copies she has paid for but expresses that she is satisfied by saying: *'I could not have done it better myself'*. However, we also noted that the volunteer in this case was not satisfied with the level of service he provided. In the Finnish workshop the socially rewarding dimension of digital guidance was emphasised. One of the volunteers described how she had just listened to a user's problems without being able to solve them, but for the user, already sharing the concerns was enough to give a satisfying service experience. The user perspective is mainly based on fieldwork in Denmark, where we were able to observe and interview users at the IT helpdesk. While the volunteers at the Finnish IT helpdesk express that their users are largely satisfied with the service provided, we were not able to interact with users in Finland due to the Covid-19 situation. It seems the users are happy with any solution the volunteer will find to solve their problem, because it leaves them in a better position than when they came. At the same time, we see that the volunteers are not professionals and that they also have a limited level of knowledge. This is supported by our literature findings about how the free labour of volunteers indicates that they cannot be held to the same standards as paid labour [27]. This is challenging for the volunteers in Finland, who express that due to the service being offered at the library some citizens perceive it as a professional library service.

## 5.5 Volunteers Solve Problems over Following Guidelines

There appears to be a difference in the services the IT helpdesks are offering on paper and what services the volunteers provide in practice. In many cases the difference comes down to the question of to what extent the volunteers should or can help the users of the helpdesk. They are all obliged to follow certain guidelines, such as not handling banking details in Finland [18], or in the Danish case to not handle the users' devices. However, as the volunteers express, it is difficult to not offer help when a person in need sits before them, leading some of the volunteers to regularly help even when it breaches the guideline of the IT helpdesk. The Finnish volunteers express that they feel that the guidelines allow them to reject requests that they feel cross their boundaries, such as service requests beyond the hours they are volunteering. In the Danish case we observed that the volunteers frequently take over the users' computers to provide the support, even though it is against the guidelines to take over the device. Breaking the guidelines clearly demonstrates that the volunteers find it more important to render good service than to follow the guidelines. If the volunteers, for example, have time, they may switch from IT support to teaching and thereby providing a rather different service compared with the expected support.

## 5.6 Volunteers Seek Influence on the IT Helpdesk

During our fieldwork we have found several examples of the Danish volunteers expressing their ideas and wishes to improve the IT helpdesk. Since the move of the helpdesk from the library's main building to the new community building, the volunteers have identified a need for more advertising to promote the IT helpdesk and communicate its new location. They do not feel that this need has been addressed sufficiently by the library coordinator, and volunteers state that the coordinator always needs confirmation from a superior before he can answer their requests. The Danish volunteers were explicit in expressing their needs to us, but they are not always consulted by the library-appointed IT helpdesk coordinator, as stated by one volunteer: *'We have not been asked about our needs when we were moving to the new building'*. In Finland we have not been able to identify similar examples. However, during the two similar mapping workshops at the two case sites we asked the volunteers to assess to what extent they could influence their respective IT helpdesk on a scale from 1-7. Here is a clear difference, where the answers show that the Danish volunteers do not feel

they are able to influence the practical setup of the IT helpdesk compared to the Finnish volunteers, who assess their influence of the practical setup more than twice as high on the scale. However, both the Danish and Finnish volunteers assess they have high influence on IT helpdesk opening hours and their tasks as volunteers.

## **6 Results - THE IT HELPDESK AS AN AMBIGUOUS SERVICE**

In the following, and based on the above empirical findings, we highlight the implications of having volunteer-based setups for IT helpdesks in the context of public digitalisation. We identify existing tensions, the critical role of volunteers in the nationwide projects of public digitalisation, and the ambiguous and quasi-public nature of the service provided.

### **6.1 Tensions in the Setup of the IT Helpdesk**

The empirical findings show how the volunteers have succeeded in providing IT support for citizens despite limited agency at the IT helpdesk, formal guidelines, unstructured knowledge-sharing, and lack of training. In Denmark it has become clear that tensions between the organisation and the practice of the volunteers exist. The municipality and library have provided a space for the new IT helpdesk where the operations from the library and the Danish NGO have merged. However, according to the volunteers the facilities the library has provided are insufficient and they do not sufficiently advertise the IT helpdesk. In addition, they do not provide regular and ongoing training for the volunteers, which could increase the feeling of acknowledgement and quality of service. This finding is however, in line with observations by Haski-Leventhal and Bargal [27] that shows that volunteers generally lack formal training and learn their tasks through peer learning or on the job. Here it should be noted that the Finnish volunteers engage in more formal peer learning compared with the Danish IT volunteers. However, we see a need to develop the technical skills of the volunteers. It seems to be implicitly expected that volunteers at the IT helpdesk either already possess these skills, or that they will upgrade their skills on their own initiative. This problem is also noted by Merkel et al. [39] who raises the issue of sustaining technology learning in an organisation that relies on volunteers who come and go. There are also discrepancies between the organisational policies and guidelines for how the volunteers are expected to act and how the reality unfolds when assisting a user, which is present at both case sites. While there are clear guidelines for how to handle personal devices or data at both sites, the volunteers often find themselves in situations where it is necessary to not comply with these guidelines because their main priority is to help the users by solving their problems.

### **6.2 The Critical Role of Volunteer-based IT Helpdesk Services in Public Digitalisation**

The empirical findings show that the IT helpdesk and volunteers fulfil the important need of supporting citizens that find the digitalisation of public services challenging. Society both acknowledges the challenge of onboarding all citizens and perceives volunteer-based helpdesk services as a way to effectively roll out public digital services. Given the semi-formal and very important role the IT helpdesks have, one may ask: how can such an important support task be left to senior volunteers? While the volunteers are doing great work and invest much effort in providing a quality service, they are not trained professionals. Put differently, the rendering of professional and fundamental services in society depends in this case on non-professional initiatives. What does that communicate about the perspective of service providers, such as public institutions and government structures, on users that need support to use their services? In addition, the Finnish volunteers seem to be motivated by social benefits and working with users with whom they can establish socially rewarding relationships rather than those with the most urgent needs. In Finland the well-educated volunteers seemed to prefer to work in library branches within easy access for them, during service hours that suit their schedules. Consequently, the volunteer-based service might fail to reach the more marginalised communities and people whose ability to receive help is the lowest. In summary, it is evident that there is friction between how important the IT helpdesks are for the individual citizens, and how fragile the base actually is for providing this important service.

### 6.3 The IT Helpdesk as a ‘Quasi-Public’ Service

The empirical findings provide a picture of the IT help service that is ambiguous, both from the user’s perspective and from the perspective of the volunteers. From the user’s perspective, the services provided are of sufficient quality, and the users are generally satisfied. However, in our observations we have noted that the volunteers sometimes provide inaccurate information, which is not surprising since no formal technical or social skills are required to engage as volunteers, and no training is provided. Hence, the service delivery of the IT helpdesk is potentially not on the same professional level as other services in the library. Furthermore, from the volunteers’ perspective, there is loyalty towards the IT helpdesk and volunteers are highly motivated to contribute. However, in one of the sites volunteers do not feel that their work is acknowledged, and none of the volunteers in the study express feeling accountable towards the users or society in general. In addition, the fact that the helpdesk service is based on volunteers with no formal training or support also makes the sustainability of the service questionable as the volunteers are not bound by any contract and may stop volunteering if they feel the helpdesk is not interesting or satisfying enough. Consequently, these ambiguous characteristics of the IT helpdesk operation makes us conclude that it may be described as a ‘quasi-public’ service, that on the one hand is offered by the library as an authoritative public institution, but on the other hand is, according to our observations, lacking in sustainability, and potentially also in quality and accountability.

## 7 Discussion and conclusion

Where should digitally challenged citizens turn to get help with using the new digital public services? The digitalisation of public services is proliferating in the Nordic countries, who are positioned at the forefront of the digitalisation development. However, despite the awareness among the government and municipalities to embrace digital inclusion, which is voiced in strategy documents for public libraries and public digitalisation, there are still citizen groups that struggle with using public digital services. In this paper, we report on a study of IT helpdesks in public libraries, an option for the digitally challenged to get IT help, which has emerged over the last decades in Denmark and Finland. In this concluding discussion, we set out to first summarise the main points from our study of the volunteer-based IT helpdesks in public libraries, and then elaborate further why the ambiguous character of the helpdesk service has led us to regard it as a quasi-public service. We then conclude by discussing the knowledge and experience of the volunteers as an untapped resource when designing public digital services.

The IT helpdesk operations we have studied are overall rather successful. In both settings, both the users and the volunteers staffing the IT helpdesks consist primarily of seniors. The seniors receive assistance not only with digital services, but also with problems relating to the bureaucratic language used in the services, and problems with the physical devices used to access them. Our data shows that the volunteers have a rather pragmatic perspective on how to help the users. For example, they sometimes deliberately breach guidelines (e.g., in handling the user’s banking details or physical device) to help them. This also resonates with our observation that volunteers regard social skills as equally or more important than technical skills, and volunteers being seniors themselves helping other seniors, is perceived as an advantage. Finally, sharing accumulated experience and knowledge with other volunteers is considered important, but it is not well organised in the settings studied.

In the following, we will elaborate on the results stated in 6.3 and relate them to literature. As mentioned earlier, we observe that the IT helpdesk service has several characteristics that sets it apart from both the traditional organisational IT helpdesk function [22], the support function embedded in being a member of a community of practice [36], and the notion of ‘digital stewardship’ [57]. Even if the helpdesk targets a distinct demographic segment in the local municipality, both in its members and users, it would be far-fetched to describe them as a community. The first characteristic is the ambiguity of IT helpdesk status. In Finland, public libraries are required by law to provide IT support, and the Finnish IT helpdesk service was perceived by some users as a formal library service. However, the service in both settings is rendered by volunteers, making it an informal service offered in a formal setting. Next, the IT helpdesk users are generally very satisfied with the service, but we have observed that volunteers sometimes give inaccurate or incomplete information. Hence, the service level is not on par with the formal library services offered by professional staff, which is also not expected from volunteers [14]. Finally, on the one hand the volunteers seem highly motivated and loyal, but on the other hand this is dependent on their services being properly recognised and

acknowledged by the libraries and municipalities. In addition, the volunteers claim that they are aware of the importance of their service in relation to the current digitalisation of public services, but they do not recognise any formal accountability in their actions, which of course also is fully in line with the nature of volunteering [14]. The self-organisation and self-management of the volunteer-based helpdesks somewhat reflects the tenets of CI, and is to some degree empowering for the seniors, but it is also volatile because it relies on volunteers with no formal responsibility or accountability. In conclusion, we regard the volunteer-based IT helpdesk service in public libraries as a ‘quasi-public service’ that is not well described by earlier concepts for technology support.

Our study has led us to some key takeaways and insights when it comes to understand, develop and implement public digital services in the context of our study:

**Volunteer support comes with a trade-off: volunteers may offer more flexibility in their service delivery than professional support staff, but they cannot be held accountable for their advice and actions.** From our observations we note that volunteers are quite flexible and will offer the support they feel is most needed, even if it is in breach of policy. They may also spontaneously elaborate their support into teaching digital skills, if there are no other visitors in queue. However, as mentioned above, volunteers generally have no formal training [27] and cannot be held to same standards as paid labour [14], which is reflected in our observations of volunteers not always delivering fully accurate information. In addition, delivering an informal service in a formal setting can create some confusion in terms of expectations from the users. Consequently, while volunteers may offer a more flexible service, one should not expect them to act as professionals or hold them accountable as such.

**Much of the help needed by digitally challenged citizens requires the ability to elaborate, explain and relate, rather than just applying technical skills to solve problems.** To be an active citizen in the digital society requires access, cognitive potential to use digital services, and using them in a sensible and thoughtful way [48]. We argue that peer support, where e.g., seniors help other seniors, and a focus on the social aspects of the support, as observed in our IT helpdesks, is an important factor to consider in organising support for the digitally challenged in digitalisation of the public sector. This resonates with the barriers to internet adoption for digitally challenged described by Runardotter et al. [48], more specifically: ‘lack of confidence in people’s own ability to learn ... skills’; ‘persistent concerns about online privacy and safety issues’; and ‘fears about embarrassing oneself in front of others’. It seems clear that receiving support from a peer, like a senior volunteer that likely shares an understanding of these barriers, can be an advantage for the digitally challenged. This also indicates the importance of maintaining a balance between social and technical skills in training for volunteers.

**Volunteer support in IT helpdesks creates opportunities for learning, both for helpdesk users and volunteers.** We have observed how volunteers helping users also sometimes teach them digital skills if time permits. We have also learnt that volunteers share their experiences from helpdesk support in the local teams on the Danish site. However, there is a lack of systematic documentation of volunteer knowledge and experience, and volunteers need opportunities to share experiences and knowledge to preserve it within the volunteer organisation. Runardotter et al. [48] highlight in their Swedish case study how citizens generally want to be digitally active, but the responsibility for education in digital skills in society is unclear. As mentioned above, public libraries are increasingly relied upon by governments to deliver access and support for digital services [25] and could potentially be a setting for educating digitally challenged citizens in digital skills, but as Serholt et al. [52] notes, not all librarians are prepared to be front-runners when it comes to new technology. We see an opportunity for volunteer organisations to have a more active role in teaching digital skills, and to more systematically document and share knowledge within their organisations.

**Volunteers are an untapped resource when designing public digital services.** In addition to taking a more active role in teaching digital skills, the results of our study point to another important opportunity for IT helpdesk services: to make their users’ needs and challenges visible. With the accumulated knowledge and experience of the IT helpdesk volunteers there is a potential resource for the design and improvement of public digital services. Considering IT helpdesk volunteers as participants in the co-creation of public digital services could benefit public service developers and address the lack of user involvement [44]. This connects the context of our case study to the traditional participatory design approach because it seems clear that public digitalisation re-introduces some of the classic problems of participatory design witnessed in the 1970’s and 80’s in workplaces, where the end-users of the imposed technology

lacked influence on its development [6, 9, 53]. Including the volunteers in the co-design of digital services might also help increase the feeling of acknowledgement and appreciation among the IT helpdesk volunteers.

The research reported in this study has some limitations as well as potential for future work. First, we only involved citizens, e.g., the users of the IT helpdesks, to a limited extent through a limited number of interviews in Denmark, which means that this perspective of the service has not been explored in our study. Second, since we have only involved the IT helpdesks in two Nordic libraries in our study, we are only able to illustrate a situated Nordic perspective without generalising our findings. Finally, we are aware that our data collection process has differed across the two countries due to local limitations during Covid-19, but we do not perceive this to significantly affect the results.

To summarise, this case study has explored the digitalisation of public services and the digital divide through volunteer-based IT helpdesks in public libraries in Denmark and Finland. We have studied how the volunteer-based IT helpdesk services in the libraries work, what their challenges are, and what the implications for volunteering in public digitalisation are. This has been described through empirical findings of the characteristics of the IT helpdesk services and the work of the volunteers. Our findings have illustrated that the services offered are perceived to be of acceptable quality by the users and works well on the surface, however, we also see an opportunity for the official public administration actors to consider how these volunteer-based initiatives can be better supported. We find it remarkable that the successful digitalisation of two welfare societies to a high degree depends on volunteering seniors with no formal training, and their willingness to support fellow citizens in their struggle to participate in a digitalised society. This lack of institutional support underlines the ambiguity of the service, which we perceive as quasi-public, and might incur challenges regarding the sustainability of the service. Finally, our analysis indicates that the HCI community ought to consider these IT helpdesks when designing new digital services. The IT helpdesks can serve both as resources in the design and to better understand citizen needs as well as how to support digitally challenged citizens when trying to access public services. The reliance on volunteers indicates how fragile these services are and that there is a need to better include them in the public digital service infrastructure. A relevant question for the HCI community is to ask how we can design and implement public services that can be used by more citizens without depending on quasi-public and volunteer-based IT helpdesks. A proactive involvement of stakeholders via existing IT helpdesks and the knowledge they have can be one way to over time lower the dependencies of volunteer-based IT helpdesks for public e-services. Imagining that we can build systems without support is unrealistic therefore the HCI community should consider needed support-structures as being an integral part of the service that should be designed, rather than a post-hoc addition to the service.

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