



**SAVONIA**

THESIS - MASTER'S DEGREE PROGRAMME  
SOCIAL SCIENCES, BUSINESS AND ADMINISTRATION

# GOOD PRACTICES IN DIGI- TAL SUPPORT FOR VISU- ALLY IMPAIRED

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| Field of Study<br>Social Sciences, Business and Administration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |            |                  |     |
| Degree Program<br>Master's Degree Programme in Digital Health                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |            |                  |     |
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| Client Organisation /Partners<br>The Association for the visually impaired in North Ostrobothnia                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |            |                  |     |
| <p><b>Abstract</b></p> <p>In this research the level of awareness, use and needs for digital support among visually impaired individuals in North Ostrobothnia was studied. Study also mapped the use and accessibility of digital healthcare services and barriers visually impaired face using digital services. Research set to find good practices to be used in developing digital support for the visually impaired. Partner in this study was The Association of Visually Impaired in North Ostrobothnia.</p> <p>There is established digital divide existing and possibly enlarging which leaves more people in danger of being excluded with fast advancing technology and digitalization. Government priorities include the digitalization of public services and accessibility has been statutorized by EU Directive. Simultaneously, pilot-projects to increase citizen ´s digital skills and develop operating model for digital support have been launched.</p> <p>Qualitative research methods of case-study and survey were used where participants were asked about their opinions about digitalization and increasing electronic services and experiences accessing digital health services and using digital support. The quality and needs for digital support provided by The Association was also valued.</p> <p>The study showed that barriers do exist for the visually impaired, but difficulties can vary considerably. Elderly people face more challenges with devices and their use due to inexperience with technology and effects of aging in general while young people have more often difficulties in transacting with authorities and managing procedures. The current strong identification system and lack of training platforms hinder the independent use of services. Digital support is needed and valued but unequally available. Designing of services should start with the needs of end-user with most challenges to create accessible service network that suites most and requires special service only as last resort. If digital skills are considered today's and future civics, learning them should be made possible for everyone.</p> <p>The study concludes that the current operating model of digital support in the Association for the Visually Impaired in North Ostrobothnia already includes good practices, whilst being in some respect centralized. There are concerns like sufficiency of resources, aging of the visually impaired and challenges in recruiting volunteers as well as promoting awareness of the services. Practices that increase the availability and accessibility of services and digital support and provision of information between all the stakeholders to increase inclusion of visually impaired should be developed at all levels. Commonly chosen regional concept could utilize e.g. methods of service design and co-creation.</p> <p>Further research could be made of topics like the cost-effectiveness of accessible design of digital services, the effects of different funding structures of the Federation and Association of the Visually Impaired and the attitudes and knowledge of healthcare professionals towards visually impaired. Business model could be created to develop and promote accessibility expertise of visually impaired.</p> |            |                  |     |
| <p><b>Keywords</b></p> <p>Digitalization, digital support, digital divide, accessibility, visual impairment</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |                  |     |

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| Studieområde<br>Social Sciences, Business and Administration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |            |               |     |
| Programm<br>Master's Degree Programme in Digital Health                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |            |               |     |
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| Titel av Thesis<br>Goda praktiker i digitalt stöd för de synskadade                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |            |               |     |
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| Handledare<br>Pirkko Kouri, Katja Kuusela                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |            |               |     |
| Partner<br>Synskadades förbund i Norra Österbotten                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |            |               |     |
| <p>Sammanfattning</p> <p>Syftet med studie var att kartlägga kännedomen, användningen och behovet av digitalt stöd med synskadade personer i Norra Östrabotten. Studie också uttalade användningen och tillgängligheten av digitala hälsotjänster och barriärer synskadade möter med digitala tjänster. Forskning söker att hitta goda praktiker för utvecklingen av digitalt stöd för synskadade. Partner i forskningen var synskadades förbund i Norra Österbotten.</p> <p>Det finns en etablerad digital klyfta som eventuellt utvidgas och lämnar kvar människor i faran av uteslutning på grund av invecklad teknologi och digitalisering. Regeringens prioriteter inkluderar digitalisering av offentliga tjänster och tillgänglighet är lagstadgad med EU direktiv. Samtidigt, pilot-projekt är fokuserade på att öka medborgarens digitala kompetens och att utveckla operation modell för digitalt stöd.</p> <p>Kvalitativ forskning metoder av fallstudie och survey där deltagare angående hennes/hans/hens åsikter om digitalisering, ökande elektroniska tjänster och erfarenhet om tillgänglighet av digitala hälsotjänster och användning av digitalt stöd. Kvalitet och behov av digitalt stöd förseende av synskadades förbund i Norra Österbotten var också värderad.</p> <p>Studie visade att barriärer existerar för synskadade men svårigheter varierar betydligt. Äldre människor har mer utmaningar med anordningar och deras användning på grund av oerfarenhet med teknologi och effekter av åldring i allmänhet medan yngre människor har oftare svårigheter med transaktioner med offentliga förvaltningen och hantering av procedurer. Det nuvarande starkt autentisering system och brist på lärmiljöer hindrar oberoende användning av tjänster. Digitalt stöd behövs och värderas men är ojämt tillgänglig. Designing av tjänster borde börjas med användare som har största behov och svårigheter för att skapa ett nätverk med tillgängliga tjänster som passar mest och krävs särskilda tjänster bara som sista utvägen. Om att lära sig digital kompetens övervägas som dagens och framtidens samhällskunskaper borde det vara möjligt för alla.</p> <p>Studie konkluderar att gällande operation modell av digitalt stöd i synskadades förbund i Norra Österbotten omfattar redan goda praktiker, men är i vissa avseenden centraliserade. Det finns bekymmer som t.ex. tillräcklighet med resurser, de synskadades stigande ålder och utmaningar med rekrytering av volontär såväl som utvidgad kännedom för tjänster. Praktiker som främjas tillgänglighet av tjänster och digitalt stöd och förseende av information mellan intressenter att öka inklusion av synskadade borde utvecklas i alla nivåer. Den gemensamt utvalda regionala koncepten kunde utnyttja metoder som tjänstedesign och samskapande.</p> <p>Ytterligare forskning ämne kunde vara kostnadseffektivitet av design av tillgänglighet digitala tjänster, effekter av olika finansiella strukturer på synskadades förbund eller attityder och kunskap av hälsövård professionell mot synskadade. Affärsmodell kunde skapades för att utveckla och främja tillgänglighet expertis av synskadade.</p> |            |               |     |
| Ämnesord: Digitalisering, digitalt stöd, digital klyfte, synsättning, tillgänglighet, goda praktiker                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |               |     |

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| Koulutusohjelma<br>Social Sciences, Business and Administration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |            |                 |     |
| Tutkinto<br>Master's Degree Programme in Digital Health                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |            |                 |     |
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| Opinnäytetyön otsikko<br>Digituen hyvät käytännöt näkövammaiselle                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |            |                 |     |
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| Yhteistyökumppani<br>Pohjois- Pohjanmaan Näkövammaiset ry.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |                 |     |
| <p>Tiivistelmä</p> <p>Tutkimuksessa kartoitettiin digituen tunnettuutta, käyttöä ja tarvetta sekä digitaalisten terveyspalveluiden käyttöä ja saavutettavuutta näkövammaisen henkilön kokemana Pohjois-Pohjanmaan alueella sekä koettuja esteitä sähköisten palvelujen käytössä. Tutkimus selvitti hyviä käytäntöjä digituen kehittämiseen näkövammaisille.</p> <p>Digitaalinen kuilu on tutkitusti olemassa ja jopa kasvamassa ja teknologian kehittyminen sekä digitalisaatio voivat edesauttaa yksilöiden syrjäytymistä. Hallituksen kärkihankkeessa tavoitellaan julkisten palveluiden digitalisaatiota ja saavutettavuutta edistetään EU- direktiivillä. Samanaikaisesti kansalaisten digitaitoja ja digituen toimintamallia kehitetään pilottiprojekteissa. Laadullisessa tutkimuksessa selvitettiin osallistujien mielipiteitä ja kokemuksia digitalisaatiosta ja lisääntyvistä sähköisistä palveluista sekä digitaalisten terveyspalveluiden saavutettavuudesta sekä digituesta. Myös Pohjois-Pohjanmaan näkövammaisten yhdistyksen tarjoaman digituen laatua ja tarvetta arvioitiin.</p> <p>Tutkimus osoitti, että näkövammaisten kokemat esteet ovat vaihtelevia. Ikäihmisillä on enemmän vaikeuksia laitteiden ja niiden käytön kanssa teknologiaan tottumattomuuden ja ikääntymisen yleisten vaikutusten takia, kun taas nuorilla on useammin haasteita viranomaisasioinnissa ja menettelytapojen ymmärtämisessä. Tämänhetkinen vahvan tunnistautumisen käytäntö ja harjoittelu ympäristöjen puuttuminen haittaavat itsenäistä palvelujen käyttöä. Digitukea tarvitaan ja sitä arvostetaan mutta se on epätasaisesti saatavilla. Palveluiden suunnittelun tulisi alkaa heikoimmin pärjäävän käyttäjän tarpeiden mukaan, jolloin luodaan palveluverkosto, joka sopii useimmille ja jossa erikoispalvelu on vasta viimeinen vaihtoehto. Jos digitaitoja pidetään tämän päivän ja tulevaisuuden kansalaistaitoina, niiden oppiminen tulee olla mahdollista kaikille.</p> <p>Tutkimuksen perusteella Pohjois-Pohjanmaan näkövammaiset ry:n tarjoama digituki sisältää jo hyviä käytäntöjä, ollen kuitenkin joiltakin osin keskittynyttä. Haasteena on resurssien riittävyys, näkövammaisten ikääntyminen sekä vapaaehtoisten rekrytointi ja palveluista tiedottaminen. Käytäntöjä, jotka lisäävät palvelujen ja digituen saavutettavuutta ja saavutettavuutta ja tiedonkulkua sidosryhmien välillä ja jotka tähtäävät näkövammaisen osallisuuden lisääntymiseen, pitäisi kehittää kaikilla tasoilla. Yhteisesti valittu alueellinen konsepti voisi hyödyntää esimerkiksi palvelumuotoilun tai yhteiskehittämisen menetelmiä.</p> <p>Jatkotutkimusta voitaisiin tehdä saavutettavien sähköisten palvelujen kustannustehokkuudesta, näkövammaisten yhdistysten erilaisten rahoitusrakenteiden vaikutuksista tai terveydenhuollon ammattilaisten näkövammaisia koskevista asenteista ja tiedoista. Liiketoimintamalli voitaisiin luoda näkövammaisten saavutettavuusasiantuntijuuden kehittämiseksi ja kaupallistamiseksi.</p> |            |                 |     |
| Asiasanat: Digitalisaatio, digituki, digitaalinen kuilu, näkövammaisuus, saavutettavuus, hyvät käytännöt                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |            |                 |     |

## PREFACE

Digitalization is said to be the fourth technological revolution in the modern history. It is shift from mechanical, analogue technology to digital electronics that spreads wide due mass production, integrated chips (IC) and Internet. It marks the beginning of the Information Age.

There is infinite amount of information available almost anywhere in the world, anytime and real-time, even in the totalitarian regimes and in the sparsely populated or remote areas. On the other hand, more than half of the world's population has no access to the internet. (Kemp 2019-30-01). The societies are still far from equal in this matter, infrastructure and environments are largely based on the needs and requirements of majority of the population and the average end-user. Those who don't have the means to voice their opinions or needs, are left to the marginal.

Disability is largely a matter of definition and classification as well as perspective and attitude. It is estimated (Sylberg 2016) that over 20% of Finnish population have different permanent or temporary disabilities or dysfunctions and demographic change is further adding to it as well as the need for accessible solutions. A definition by diagnosis, prognosis, level of invalidity and a mix of laws and regulations, classification by socio-economic status can leave a person with equal opportunities and possibilities or labels and barriers that follow through life.

If digital skills are considered new civic skills, there needs to be a way to learn those skills. For a person who has never used a computer or a smartphone, a chat-service or an online-course of training is not an option but guiding needs to start from the very beginning. This guidance should be available for everyone regardless of life-situation, location, disabilities, age or income.

With careful and inclusive development and design, it is possible to have a society where accessibility is a part of the process from the start and the need for separate assistive solutions is minimized (Sylberg 2016). Accessible digital support should be included in every electronic service or product to ensure the safety and independency for the end-user.

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## 1 INTRODUCTION

Digitalization and technological development are changing services to an electronic environment. The shift is said to bring savings by cutting costs and helping re-focus resources with an aging population and the demographic dependence ratio is worsening. In 2017, the healthcare costs in Finland were 20,6 billion euros which equals 9,2 % of the gross domestic product (GDP). Costs were 2,4 % higher than the year before and third (7,4 billion) consisted of specialized health care costs. (THL 2019.)

Automation and consumerism have shaped our society to be always open and the Internet revolutionized the way we use services and manage information. People want to access services at any time and anywhere. Not everybody can easily adapt to these changes. This causes a digital divide or digital polarization caused by inequality in access to information technology. People are divided into information rich and information poor, and the latter have less influence in society. (Norris 2001, 4). E.g. elderly people, many groups of disabled people or persons with various dysfunctions need support and guidance to be able to function equally and independently. (Vesänen-Nikitin and Åkermarck 2017, 11).

To make a service available does not make it necessarily accessible. This is not always considered when developing and designing services and products. E.g. a visually impaired person may need assistive technology like screen reading software or a speech synthesizer to use a computer. (Mikkola 2005-17-04). This can make it difficult or even disable the use of a service. The end-user may not have a channel to influence or give feedback about the special needs for accessing services and designers may not have experience about the existing barriers.

It is difficult to walk in another person's shoes and imagine a reality where you cannot check opening hours or your bank credit, renew your recipes or make an appointment. Half of the population in Finland have difficulties in using electronic services and without concrete social-political decisions exclusion will be a structural phenomenon and problem. (Koskinen & Saarinen 2019, 5). The complexity of the society has increased, and social rights are being replaced by social responsibilities.

EU commission perceives technology especially from the perspective of citizens by increasing the freedom of choice and mobility and lessening of inequality. It is also seen as a strategic tool to solve the challenge of demographic shift and maintain the quality of healthcare systems. (Reponen, Kangas, Hämäläinen, Keränen and Haverinen, 2018, 29.) EU directive of accessibility (EU 2016/2102) effective from December 2016 and executed nationally in Finland effective from 1<sup>st</sup> of April 2019 (acts 306 and 307/2019), mean a lot of work and adjustment from the government to implement the changes and meeting the requirements.



There were five strategic priorities in Juha Sipilä's Government Programme visioning the future "Finland 2025" with 26 key projects. As one of the five priorities, digitalization aims to create means for digital business operations, implement deregulation and digitalize public services. (Government action plan 2018, 8, 45 – 47.) A lot of work is to be done with influencing attitudes of citizens and organisations, creating channels for information and provision of training of digital skills. The long preparations failed the execution of the reform of Health and Social Services that was abandoned and new Government Programme 2019 – 2023 was established by Prime Minister Antti Rinne and his follower Sanna Marin. Key priorities are still digitalization and technology, but with more focus on ensuring services for all citizens equally. (Ministry of Health and Social Welfare 2019).

User-based design, Design for All, a Society for All and Lifespan of service- design are all concepts, in which accessibility is acknowledged throughout the process. In these concepts, accessibility is also considered from an economical perspective and with the notion, that all users gain from accessible services. (Vuokko, 2018-07-11.)

The Thesis is done in co-operation with The Association of Visually Impaired in North Ostrobothnia. The topic for the thesis was my own, but it was accommodated for the needs of The Association. Study is meant to map the awareness, use and need for digital support among visually impaired and to gather good practices from the ongoing projects to develop operating model for national digital support. The topic is relevant in many ways during the changes and the work aims to provide new and useful information. For aiming to be accessible and readable, the thesis report does not include any diagrams, pictures or sheets to ensure interoperability with screen reading software.

## 1.1 Literary review

Disability is a social phenomenon and solving it should also start with the community rather than individual. (Näkövammaisten Liitto.) The basis for the policies of disability are in human rights and non-discrimination is stated in the Finnish Constitution. As a part of the Ministry of Health and Social Welfare, the Disability Advisory Board is promoting the rights of the disabled and the Institute of National Health and Welfare (THL) is conducting research to develop special services. (Ministry of Health and Welfare, 2018).

According to Finnish non-discrimination ombudsman's survey (Pimiä 2016), over half of the respondents stated that attitudes towards the disabled in Finland were bad or very bad. Over 60% had encountered discrimination in some area of life: mostly age, disability or health related. The main reason for not reporting the discrimination, according to the respondents, was the lack of trust that anything would be done to sort the matter.

Digitalization is inequalising or marginalizing people because not all have the means or the resources to use the electronic services. (Ohisalo 2019.) The credentials are the most common strong personal identification used to access electronic services. Everyone is not eligible or can use them securely or independently. In Finland, there are areas in which the internet-connection is not sufficient or has blind spots. People lack the means or the will to use electronic services. There are language and cultural barriers and even if help is available, it does not reach everyone.

A lot of research is based on the views of experts, health care professionals or indicators from data analysis. According to some of those studies (Tuominen 2014, Seyoum Teshome 2017, Ministry of Transport and Communications 2011), a digital divide exists between those who know how and can access digital services and to those who by various reasons cannot. In practise, it is much more complicated phenomenon where the idea that having access to ICT is no longer a guarantee that the digital divide is solved. (Mubarak 2018, 10). Healthcare information digital divide (HCID) also recognizes the term eHealth literacy as ability to find, understand and use electronic sources to solve a health problem. (Neter & Brainin 2012, 145). It is also a myth, that younger people are naturally digital natives, when in fact, they more often need help with using and understanding the public services where elderly persons tend to need help with the equipment and technology. (Viljanen 2018-10-19).

Technology is advancing in huge leaps and organizations are trying to harness it to become more efficient and profitable. Digitalization is also sped up with legislation and regulation or deregulation. (Government Action Plan.) During the Presidency of the Council of the European Union in 2019, Finland has set a goal to promote future digital economy policies and adoption of AI in all sectors to benefit the European economy. (EU2019.FI).

The digital environment is very visual, and the user experience is designed to include the wow-factor time and again. As always, not everyone can enjoy all the visual and interactive elements as added value, but rather obstacles that prevent the use entirely. This is referred to as aesthetic-accessibility paradox when designer tries to meet the needs of both the majority and the minority of users. (Ux-movement 2019.) A majority (70%) of Finnish population aged 75-89 years see technology and applications difficult to use and almost half of those do not see the need to learn more. (Nordlund, Stenberg and Lempola 2014). Almost 20% of people over 65 years and over 50% of people over 75 years have never used the internet. (Statistics Finland 2018). There is an estimate of 250 000 people (5 % of population) with some sort of dysfunctionality or disability that requires assistive technology in accessing electronic services. (Ministry of Finance 2017, 12).

The research and studies conducted with the visually impaired and other disabled (Kaye and Marriot 2010, Blind Citizens Australia 2013, Mubarak 2018, Pimiä 2016) establishes barriers in digital services. Those include general difficulties in gaining information, accessing services both in electronic and physical capacity and the psychological burden of being dependent on other people and not being able to function independently. Informational security and the risk of being exploited were also mentioned as severe threats.

There have been opportunities to improve accessibility, but in lack of legislation and common practices the situation is unequal and fragmented. (Vesanen-Nikitin and Åkermarck 2017, 2). By way of support, the third sector has had a major role in helping people deal with everyday problems and many of those who need help want it from someone they know or can relate to. (Nordlund et al. 2014). Relatives and peers are primary sources of help and guidance in digital matters. It is important to ensure the bureaucratic equality e.g. the use of public services, but from the perspective of quality of life, the everyday services mean the most. "It is no hardship to use personal assistant once a year with my taxes, but it would be nice to use a voice operation to order a pizza or check the bus timetables", says Ronja Oja, a blind athlete and a coder. (Paavola 2019).

Digital support has been offered as long as there have been digital services, but the quality and equality have not met the needs of the end-users, at least those with disability or dysfunction. Digital support should be considered a natural part in the transition towards digitalization and it should be made as easy as possible. With legislation the public sector in Finland have been obligated to offer support for the use of services and provide possibility to give feedback. Web pages need to be in accordance with the Act on the Provision of Digital Services (306/2019) and EU Web Accessibility Directive by 23rd of September 2020 and mobile applications by 23rd of June 2021 (Finlex 2019, EUR-LEX 2016).

## 1.2 Definitions

The Association= the Association of the Visually impaired in North Ostrobothnia  
 The Federation= the Federation of the Visually Impaired in Finland

In this thesis, I refer to the Association of the Visually Impaired in North Ostrobothnia by shortening it as The Association and to the Federation of the Visually Impaired in Finland by shortening it as The Federation. If there is reference to other associations or federations, it will be mentioned.

## 2 VISUAL IMPAIRMENT

### 2.1 Vision system and normal vision

Light is essential in our perception of environment and it is the single most important reason most species have developed a sense of vision. (Vanni 2008, 10.) Vision system consists of two functional parts, the eye and (parts of the) brain. The brain does the complex image processing, while the eye functions as the biological equivalent of a camera. The human visual system has evolved to transforming waves of electromagnetic radiation to neural activity and further into images. (Belorustceva 2016-15-10.)

When talking about normal vision, it is a combination of factors that enable a person to achieve a certain visual acuity, sufficient visual fields and operational vision when moving. Vision can be seen as a continuum with perfect clear vision in every circumstance in one end, and total blindness (no perception of light) in the other. (Ojamo 2017). Normal vision requires that extraocular muscles are functioning so that both eyes are aligned. It also indicates that the ocular media (cornea, the lens and the vitreous) are clear and retina, optic nerve and visual pathway are intact. Eyes are a part of central nervous system and unhindered development of brain is essential for vision system functioning normally. (Lindahl 2013, in Uusitalo and Ojamo 2015, 27.)

According to Saari, Mäntyjärvi, Summanen and Nummelin (2001, 55 - 56) visual acuity is a measurement of central distance vision and it indicates the individual's ability to see two separate target points from a certain distance. Korja (2008, 10) explains that it has been settled that normal visual acuity is 1.0 that equals visual angle of 1 arc minutes (British 6/6 and U.S. 20/20) but can individually range from 0.8 to 2.0. Mostly a distance of 6 meters (20 feet) is used and if the test is made with some other distance it must be either notified with the visual acuity results or converted for comparison. (Saari et al. 2001, 56.) The result is informed as a fraction or a decimal number, depending on the system used. SI-system or the decimal system is most widely used, the British use the fraction system with metric units and fraction system with feet unit is used in the United States. (Korja 2008, 11.)

Visual acuity is used as a diagnostic tool and it works as a baseline data for evaluating treatment and measure progression of a disease. There are also legislative reasons for measuring and documenting visual acuity e.g. when issuing or renewing a driver's license or making the assessment of visual impairment. Distance visual acuity is measured with standardized testing tools, visual acuity charts. According to Korja (2008, 16) the Snellen E- type is considered to be the standard and is a normative test in primary healthcare because it is easy to understand and interpret for e.g. children or illiterate. (Saari et al. 2001, 57.) The most reliable but also the most difficult is the Landolt C- type. Korja (2008, 17) explains that it has the most possible options that cannot be memorized and are difficult to guess. The biggest letter equals visual acuity of 0.2 or 0.16 and the lowest row equals visual acuity of 1.0 or 1.2.

## 2.2 Visual impairment by definition and classification

Visual impairment or vision impairment is a broad term meant to describe various conditions causing functional limitations of the vision system or the eyes. A person can be considered visually impaired when there is a severe disadvantage in managing daily functions. (Saari 2001, 440.) World Health Organization (fact sheet 2019) states that globally, 80% of vision impairment is avoidable because the leading causes in adults in low- and middle-income countries are uncorrected refractive errors and cataracts. In high-income countries conditions like diabetic retinopathy, glaucoma and age-related macular degeneration (AMD) are common causes for visual impairment. Among children, in low-income countries congenital cataract is the leading cause for vision impairment whereas in high income countries it is more likely to be retinopathy of prematurity. The prevalence of visual impairment in the world is 285 million. Of those, 39 million are blind and 246 million have low vision. Further, 65 % of people who are visually impaired and 82 % of all with blind status are 50 years or older. (Mariotti 2012).

Overall, the definition of visual impairment depends on the values of the society and it varies according to services, authorities and criteria. In Finland, the WHO definition is used as a base for a classification in the register of the visually impaired. In the annual statistics of the register of visual impairment 2017, Ojamo explains that the notification to the register is largely made by ophthalmologists or ophthalmological unit of a hospital. They have the obligation to notify the register if a person's corrected visual acuity is permanently less than 0.3 in the better eye or otherwise comparable with a person with permanent visual impairment. Register was established as late as in 1983 and is maintained by the Federation of the Visually Impaired subject to the National Institute for Health and Welfare. But for instance, in KELA, the discretionary services use own criteria for benefits and municipalities have own definitions based on service needs. There are also visually impaired people who are not in register and therefore not presented in statistics.

According to WHO classification (e.g. Saari 2001, 441) a visually impaired person has a corrected visual acuity of less than 0.3 in better eye or the vision is otherwise similarly reduced. This includes classes 1 moderate visual impairment and 2 severe visual impairment. A blind person has a corrected visual acuity of less than 0.05 or a visual field under 10 degrees. This includes classes 3 profound visual impairment, 4 near-total blindness and 5 blindness. In addition, the Finnish register uses classes "unspecified visually impaired" and "unspecified blind". According to classification, blind can in fact refer to a person who has normal visual acuity, but only for a very small, central vector (tunnel vision) as well as to a person with normal visual fields who cannot even see the largest optotype in the visual acuity chart with correction. (Näkövammaisten Liitto.) Total blindness is in fact very rare.

In addition to classification, the class and/or level of handicap is determined. In assessing the level of handicap, problems like glare, reduced night vision, nystagmus, forias or tropias and color vision deficiency are considered, and the level is presented in relative percentage. (Saari 2001, 441.) The

relative level is used in some services to narrow the recipients, e.g. Finnish Railway company (VR) grants usher ticket from level 65 % and vehicle tax return requires level 60% or 80%. However, e.g. Accident Insurance Act and parking permit for the disabled (class 17) require the use of class of handicap that is a scale from 1 to 20. Conversion is done by multiplying the class by 5 to get the relative level of handicap. E.g. handicap class 10 equals handicap level of 50 %. This is the required level in membership of The Associations of Visually Impaired. (Näkövammaisten liitto.)

Despite the diagnose, level or classification, visual impairment is experienced in different ways. The common practical disadvantages are related to perceiving the surroundings and social interactions. The adaptation also relates to the age and the way of disablement. The Finnish Federation for the Visually Impaired has listed these difficulties (Näkövamman aiheuttamia ongelmia): orientation and moving in an unknown environment, a risk of falling, tripping or colliding and suffering from glare, nyctalopia or other night blindness or reduced visual field. Social interactions are challenging with the inability to recognize people, their facial expressions and signs and detect and respond to eye contact. Managing own or family's daily tasks like hygiene, cleaning or other household chores can be challenging. The lack of independency and needing to rely on other people can be mentally burdening. (Muhonen 2018, 4.)

### 2.3 Visual impairment as a disability

A process of becoming disabled begins with illness or accident which causes deficiency or anomaly in anatomic structure. This is limiting or disabling individual to function facing society's requirements of the non-disabled. (WHO 2018.) When a disability is seen as a social phenomenon rather than a characteristic of an individual, the solutions can be found within the society and the responsibility is shared. Disability usually concerns only one organ and the effect is limited to the function of that organ, so other features are determined by same grounds as with the non-disabled individuals. (Ojamo, 2018, 10.)

From the basis of WHO's ICIDH- classification of disabilities, defects and disadvantages mostly used in official discussions and education, a more practical ICF- classification of functioning, disability and health was developed. Muhonen (2018, 7 – 8) reminds that suitable model for describing the operational status of an individual that takes e.g. environmental factors, such as level of education, into account. By describing, what can be done instead of what cannot be done, it creates a more positive and less stigmatic approach. (Ojamo 2018, 11.)

## 2.4 Statistics of visual impairment in Finland

### 2.4.1 Prevalence

Due to the mentioned differences in definitions and practices as well as research methods and classifications, there is no accurate, up-to-date number of visually impaired in Finland. The register of visually impaired has been established as late as in 1983 which means that persons diagnosed or classified before that are not necessarily registered. The register is for statistical purposes only and does not bear reference to the medical status of the visually impaired person. Estimates of the amount of visually impaired in Finland vary from 50 000 people (Terveys 2011) up to over 60 000 people. (Ojamo 2018, 4). That equals 1.6% of the population over 30 years old in Finland. Out of those, 15 % are to varying degree blind and over 80 % with low vision measured with distance visual acuity. There are also people with narrowed visual fields or other unspecified visual impairment. (Ojamo 2018, 4.)

Some studies (Ophthalmology 2018, Terveys 2011) suggest that the amount of visually impaired is decreasing because of improved diagnostics and more effective treatment of the causing diseases while others state that the aging of the "baby boomers" and the rising life expectancy is going to increase the number of the visually impaired.

The age- and gender standardized prevalence of visual impairment by university hospital districts is 35.6/10 000 citizens. Kuopio district (KYS) has the highest prevalence (44.1) and Helsinki district (HUS) the lowest. Oulu district (OYS) has a prevalence of 34.2/10 000 citizens which equals to an estimate of nearly 4100 persons. (Tolkkinen, Ketonen & Juntunen 2019, 4.) The differences can be explained with how actively the notifications are made and processed and to some degree also how much the private sector is involved in treating and researching the visually impaired. (Ojamo 2018.) In a study by the National Institute for Health and Welfare (Terveys 2011) it is indicated that in addition to the classified visually impaired there are more than 170 000 persons with vision problems; decreased functional vision (visual acuity 0.5 – 0.32) or cognitive problems, non-suitable refractive correction or lack of visual aids etc. This equals over 6% of population in Finland. In reality, the amount of people needing and benefitting from accessible digital services is substantial and when thinking about it, who wouldn't want services that are simple, fast and secure?

## 2.4.2 Age and gender

From the annual statistics 2017 (Ojamo 2018), it is easy to realize the demographic structure of visually impaired. The median of all the registered visually impaired was 79 years and of the new registered 83 years. From the newly registered visually impaired, 80-85 % are over 65 years old, 12-14 % are 18-64 years old and 2-8 % are under 18 years. This is the trend in all the high-income countries. Annually around 300 – 400 working aged persons (18 – 64 years) are disabled and 70 – 100 visually impaired children are born in Finland. Majority of visual impairment is related to aging. The higher life expectancy of women also shows in the statistics, the median age for women was 83 years and for men 69 years. Overall, women dominate the register by the share of over 60%, however men dominate the prevalence up the age of 65, after which women have prevalence higher than men (over 3-times higher in age group over 85 years old).

## 2.4.3 Diagnoses

The diagnoses for the visual impairment are very different in different age groups. Ojamo (2018) explains that for children under 17 years, the two most prevalent causes are optic track dysfunctions (33%) and congenital anomalies (22%) while in the group of 18-64 years the two most common causes are hereditary retinal dystrophies (21%) and optic track dysfunctions (20%). Looking at the diagnoses of the age group of over 65 years, the by far most common cause is the age-related macular dystrophy AMD (59%) and the second common cause is glaucoma (10%). They are also the conditions in which incidences are rising.

## 2.4.4 Education and employment

Statistic (Ojamo 2018) shows that over 44% of visually impaired have an education of upper secondary school with reference to whole population is 44,8 %, but differences are in the basic and tertiary education. Over 36 % of visually impaired have only basic education (up to 9 years) when reference to whole population is 22,8 % and just little less than 19 % have tertiary education (13 or more years) with reference to whole population is 32,4 %. This can partly be explained by the age distribution of the visually impaired, but it also indicates the barriers that visually impaired face in seeking education.

Of visually impaired aged 15 – 64 years, over 50 % are pensioners when reference to whole population is 9 %. Students and unemployed are both around 3 % with reference to whole population is 6 - 7 %. Full (22 %) or partial (17,5 %) employment with visually impaired is considerably lower than in reference to whole population 68 %. (Ojamo 2018.)



#### 2.4.5 Visual impairment in North Ostrobothnia

In the report by The Federation (Tolkinen et al. 2019, 19), it is estimated that over 4000 visually impaired live in the province of North-Ostrobothnia (4094 persons). That equals approx. 1 % of the population of 412 665 in the area (Statistics Finland 2019) and 7,42 % of all visually impaired in Finland and makes the fourth largest group by the health districts. The report states that only 950 visually impaired have been registered and 600 are members of the Association. The difference in the ratio of registered can be explained by the establishing of the register as late as 1983 which leaves previously diagnosed people uncoun- ted for. Another reason can be the variety in the knowledge and practices among ophthalmologists about the obligation to make the registration. (Ojamo 2018.)

#### 2.5 Advocacy and services

The umbrella organization in Finland is the The Finnish Federation of the Visually Impaired. They aim to secure an equal status for the visually impaired in the society by improving the capabilities and skills of the individuals as well as influence the society. They offer free advice and guidance mainly for visually impaired and their relatives.

The Federation maintains network of international contacts and development, provides special rehabilitation, assistive technology, training and produces braille, large-print and audio materials and guide dog training. Services don't require membership (excluding STEA- funded services). There are 14 regional and 10 activity-related associations nationally that are further divided to 100 local branches. (Näkövammaisten Liitto.)

The regional association in North Ostrobothnia is in Oulu. The day-center is open from Monday to Thursday and offers daytime activities, advocacy services and specialized ICT- support regardless of membership or impairment status. The association has expertise by experience- trained individuals that give coordinated peer-support. (Pohjois-Pohjanmaan Näkövammaiset ry.)

Annapura Ltd. is a social enterprise owned by The Federation. According to their website (Annapura 2020-08-02) it offers web accessibility testing, consulting and training for e.g. research, authorities or healthcare along with transcribing, documenting and word processing services. Company employs 17 whole-time and 10 part-time visually impaired persons. (Näkövammaisten Liitto.)

LUETUS is a free online service and mobile app where newspapers, magazines and books are in audio-format. It is also possible to use a special, easy-to-use Daisy- player for this service. The Federation provides the service in cooperation with the publishers. Service is available for registered users with the minimum level of 50% degree of disability. (Näkövammaisten liitto.) CELIA is an audio library service to those who are not able to read ordinary books. They produce audiobooks, touch-reading materials and coursebooks. The free service is provisioned by the Ministry of Education and Culture, but registration is needed. (Celia 2019.)

According to Näkövammaisten Kulttuuripalvelu ry (2020-08-02), audio description is a form of interpreting, it is "telling what you see" so that the receiver can be included in the experience in equal level. Audio description is available e.g. in television, museums, movie theaters, sports events and other cultural events but it can also be used to describe space, route or environment. (Lehtiniemi 2019.)

## 2.6 Legislation and regulation

Non-discrimination Act 1325/2014 was effective in Finland in 2015. Equality is a basic right and the law covers both non-discrimination and equality. (Yhdenvertaisuus.fi). Law forbids discrimination based on disability or other person-related features and obliges the use of reasonable adjustments for the disabled in case-by-case consideration. The enforcement authority is with non-discrimination Ombudsman and the Board of non-discrimination and equality. Further definitions for the forbidding can be found in e.g. in criminal code of Finland 39/1889, amend. 766/2015, act on equality between women and men 609/1986 and employment legislation (employment contract act 55/2001, amend. 597/2018, working hours act 605/1996, amend. 991/2010, annual holidays act 162/2005, amend. 346/2019, pay security act 866/1998 etc.) (Jantunen, Mäntyjärvi, Rättäri and Björkberg 2019.)

United Nation's Convention on the Rights of Persons with Disabilities (CRPD) has been effective in Finland since 2016. (UN 2008). The Advisory Board for the Rights of Persons with Disabilities is the national coordinator for the implementation of the Convention. The main purpose is to promote national strategies and to consider the autonomy rights of persons with disabilities in all aspects of governmental activities. The Board operates under Ministry of Social Affairs and Health. It consists of representatives from various ministries, persons with disabilities and their families, labour organisations as well as regional and local government attendees. The Convention also imposes improvement of accessibility of services by using the principles of Universal Design. (Jantunen et al. 2019.) European Disability Strategy by European Commission has ambitious goal of ensuring effective implementation of the UN Convention across EU with identifying and eliminating barriers and determining actions to help the development in societies. (European Commission 2010).

The ensurance of patients equal stand in social and healthcare services is defined at least in following legislation: Administrative Procedure Act 434/2003, Social Welfare Act 1301/2014, Act on Supporting the Functional Capacity of the Older Population and on Social and Health Services for Older Persons 980/2012 and Act on the Status and Rights of Patients 785/1992. Listed are e.g. the right to guidance by the acting authority, the right to explanation on patient rights and responsibilities and the right to know what personal documents the authorities have registered and a right to translating or transcribing service. The authorities have an unprompted obligation to clarify and state the options and requirements for organizing the services and benefits in a way that supports the situation of the person and their family. (Jantunen et al. 2019.)

Social welfare is obligated to organize a customer plan or a service plan that considers and registers all the needs, rights and requirements of a person in co-ordination with the person and their closest circle of people (family, personal assistant, carer, rehabilitation nurse etc.). Services can be applied based on that plan. Act on Services and Assistance for the Disabled 3.4.1987/380 obliges the municipalities to organize services to the disabled according to their defined subjective rights or objective rights that depend on resources of the municipality. Subjective rights include transportation, personal assistant, assistive technology, assisted housing and daytime activities. Resource-based rights include rehabilitation, clothing and special diet allowance. Assistive technology can be reimbursed if they are necessary in functioning in everyday life. (Jantunen et al. 2019.)

Finnish Social Insurance Institution (KELA) provides basic economic security to those who live in Finland and are under the social security system. It offers benefits for different stages in life and e.g. reimbursement for medicines, travel costs and private doctor's fees. For visually impaired there are disability allowance or pensioner's care allowance, rehabilitation service and interpreter services. (Jantunen et al. 2019.)

## 2.7 Assistive technology

Assistive technologies can be divided into two groups based on either the ability to assist in perceiving the contents or control the device and further to either installable software or separate hardware (Kehitysvammaliitto, Papunet). Assistive technology can be granted by KELA for the purpose of working or education, by district hospitals as special medicinal device, by health centers as basic medicinal device or by social welfare as reimbursement for devices to aid everyday life. Assistive technology services provided by KELA and public healthcare are free and include the need assessment, dispensing and maintenance of the devices. (AVIRIS 2016, 57.)

People with visual impairment need uncluttered environment and good lighting to be able to function. (Saari 2001, 454). Contrast and color differences help discern the surroundings, e.g. milk in a dark glass and coffee in white cup. Magnification is usually the first and the simplest of aids. Different kind of magnification devices are available, from magnifying glasses to electronic reading televisions and binoculars. According to Tolkinen et al. (2019, 24), the most granted low-vision aids in Finland are glasses and contact lenses, magnifying glasses and other magnifying devices and most common aid for the blind is the white cane.

The Braille-system is a touch reading and writing system in which raised dots represent the letters of the alphabet. Braille is read by moving hands from left to right along each line. It is based on a system developed by a soldier of French army in the early 1800s for a safe method to communicate at night in the combat situation. The system was further developed by Louis Braille (born 1809), who got accidentally blind and at the age of 11, started to modify the "Night Writing" to a more efficient communication system for the blind. It is currently accepted and adapted among blind around the world. (BrailleWorks.)

Most blind or vision impaired people that use a computer do so with standard keyboard with the help of screen reading software or adapted keyboard and voice recognition solutions. (Saari 2001, 449). Tablets, smartphones and handheld devices are becoming more common and can be adjusted to accommodate the needs of visually impaired. The ability to zoom or change the resolution or contrast of the screen are important features as well as voice over or voice operation feature.

(Näkövammaisten Liitto.) There are both free and payable solutions available. Many applications have been made to assist visually impaired in navigation, identifying objects or to ensure safety.

### 3 ACCESSIBILITY

The terminology around accessibility is complex and different definitions and descriptions are sometimes falsely used and understood. There are different words for the different aspects of accessibility while some just use that one term with explanatory additions. According to Regional State Administrative Agency Southern Finland (AVI), accessibility is regarding the variety of users in designing and developing web-based services. It means extracting all barriers and obstacles that effect inclusion in society for people with disabilities (Ahola S.A. 2020-09-02). Three terms can be defined to describe the approaches to accessibility: availability, usability and accessibility. Accessibility mostly refers to other than physical environment e.g. services or electronic communication. (Invalidiliitto).

Availability is the physical access to a place or a service, e.g. logistics, infrastructure and design. Availability is functionality and safety of the environment. (AVI). It also means social and attituded access to a place or a service, e.g. signs, support and guidance, instructions, independency and integrity. (Invalidiliitto.) Usability refers to how easy it is to use the product or device in practise, e.g. how fast it is to start to use it, how efficiently the task can be accomplished, how easy it is to re-use it after a while, how accurately it can be used and how easily errors can be detected or corrected and how agreeable it is according to users. (Kehitysvammaliitto.) Usability deals with the technical execution, user interface, navigation and content creation. (AVI).

Accessibility is a concept that consists of detectability with senses, manageability dictated by anatomy and the ability to use control devices, comprehendability of language, signs, lay-out etc. and reliability (durability, stability, consistency) of the product or service. (Kehitysvammaliitto). It can also be described as composing the physical, psychological and social environment so, that every individual can operate equally dependent of their qualities. (Ministry of Transport and Communication 2011, 9).

To make a service available does not make it necessarily accessible. There are barriers, both visible and invisible, that make the use of services difficult or even impossible for people with disabilities. A service itself can be basically accessible, but e.g. so expensive or complex that it is not usable or available and that is considered a barrier of accessibility (Ahola S.A. 2020-09-02). This is not always

considered when developing and designing services and products. There just might not be a reference to all the needs of different end-users. A visually impaired person may need assisting technology e.g. screen reading software or a speech synthesizer to use a computer. (Mikkola, 2005-17-04). This can make it difficult or even impossible the use a service.

One important part of accessibility is the inclusion aspect. When accessibility is considered throughout the process most people can use the same service independently and safely. (AVI). The end-user may not have a channel to influence or give feedback about the special needs for accessing services and designers may not have experience about the existing barriers. There needs to be an easy way to communicate and consensus among authorities, governances and leaders to promote the change to universally accessible products and services.

### 3.1 Web Accessibility Initiative

Web Accessibility Initiative is a joint effort from World Wide Web Consortium to improve the accessibility of webpages, mobile applications and digital services. Ideally, all websites should be created according to universal design principles to eliminate or reduce barriers. (Disabled People 's Association Singapore 2015, 4). They have developed international standards for web accessibility and produced free materials for understanding and implementing the accessibility.

Web Content Accessibility Guidelines 2.0 is a technical standard primarily intended for developers, policy makers and researchers and can be used for authoring and evaluation tool. Industry, disability organizations, governments, accessibility research organizations etc. are involved in the process to promote usability for people with disabilities. (Making the Web Accessible). The Non-discrimination Act (1325/2014) obligates the public service providers to ensure accessibility of their services and even make reasonable adaptations to achieve that.

### 3.2 Design for All

Design for All is one of the widespread concepts aiming to build a society suitable for everyone. European Standard of Design for All (17161:2019) was ratified in 2018 to ensure the application of defined in United Nations Convention of Rights of Persons with Disabilities (CRPD). It presents the inclusive approach as a fundamental condition of good design in every aspect of life. The emphasis is in the sustainable and ethical design and the added value that comes with it. When there is a consensus to promote the wellbeing of the different end-users, it has an impact to the economy, politics and the values throughout the process. (Design for All Foundation S.A. 2020).

Like the similar concepts Inclusive Design and Universal Design, Design for All was first introduced as a perspective of disabled dealing with environmental design. It has developed to a strategy of mainstreaming, to make the same design work for as many as possible and only if that fails, introduce a special solution. Design for All is the most widely used term in Finland.

There are generally seven principles presented to describe and define a service or a product following Design for All (same apply for universal design) according to Centre for Universal Design (1997). Design should be useful and engaging to people and their variable abilities. Using the design needs to be flexible so user's unique preferences and skills are considered. Simplicity and intuitiveness support intelligibility regardless of experience, language or concentration level. Design should enable effective communication of necessary information regardless of user's sensory abilities. Minimizing hazards and avoiding consequences of unintended actions creates tolerance for error. Using design shouldn't require much physical effort and it needs to function despite body size, posture or mobility.

### 3.3 Service design

Service design is a term created to describe the procedures e.g. NGOs have long been doing and what their operations are based on, fulfilling people's needs. According to Hirvonsalo (2017-04-06), it is deep understanding of customer needs through empathy and development by experimenting and prototypes to create value in business. Service design as a concept has implemented inclusive methods, marketing and agility to traditional designing of services that have been concentrating to the perspective of the provider. Observing, interviews, visualization, prototypes and experimenting are some of those methods. (SOSTE 2020.)

Service design can be used to evaluate current services or create new ones and is scalable to physical or digital environments alike. Understanding the incentives and behaviour of the customer and the different paths to the core service and reviewing the appropriacy of used practices along the whole process of service-experience, possible problems and development points can be found. (SOSTE 2020.)

## 4 DIGITALIZATION

In THL report of Use of ICT in Finnish healthcare in 2017 (Reponen, Kangas, Hämäläinen, Keränen & Haverinen 2018) it is stated that all public and the research sample of 26 private healthcare organizations in Finland have at least an informative website and the most common eHealth service available is online reservation system. The provision of guidance and a channel for viewing and managing personal health data and give feedback have increased.

### 4.1 Terminology

Digitization is the automation of a process by digitizing information e.g. paper document into digital format. Digitalization means turning interactions, communications and models into (more) digital ones by leveraging digital technologies and processes with e.g. digitized data.

Digitalization can be seen as an effort of making smart use of digitized information and integration of digital technology into everyday life. It is seen in every aspect of life and in society, changing the way we work, live and spend our free time. It is result of fast technological advancement and acts as a catalyst to further fuel the development of products and services. (I-Scoop.)

### 4.2 Digital divide

Digitalization is inequalising or marginalizing people because not all have the means or the resources to use the electronic services. (Kasvi 2016). Elderly people still prefer personal service and guidance at least at times and many disabled groups are reliant of personal assistance. The credentials are the most common strong personal identification used to access electronic services. Not everyone is eligible or can use them securely or by themselves.

In Finland, there are areas in which the internet-connection is not sufficient or has blind spots making the connection unreliable. (Ministry of Transport and Communications 2011.) People may lack the means or the will to use electronic services. European DESI index (European Commission 2019, 3, 7) states that 76 % of Finnish population has at least basic digital skills, but Finland lacks a strategy or responsible body for developing digital civics and expertise.

There are language and cultural barriers and even if help is available, it does not reach everyone. Even when transactions on behalf can be granted, security and exploitation can become issues of concern. Some also suggest that the divide is growing rather than diminishing because while the possibilities for inclusion with digitalization increase so does the relative exclusiveness of elitist products and services.

Technology is advancing in huge leaps and organizations are trying to harness it to become more efficient and profitable. The digital environment is very visual and the user experience (UX) is planned to include the wow-factor repeatedly. As always, not everyone can enjoy all the pictures and interactive elements as added value, but rather experience them as obstacles that prevent the use entirely.

The research and studies conducted with the visually impaired and other disabled (Kaye and Marriot 2010, Blind Citizens Australia, Pimiä 2016) established barriers in digital services. Those include general difficulties in gaining information, accessing services both in electronic and physical capacity and the psychological burden of being dependent on other people and not being able to function independently. Informational security and the risk of being exploited was also mentioned as severe threats.

### 4.3 Digital support

The term digital support was introduced in a Finnish government project AUTA in 2016-2017. (Sarmela 2018). It was defined as: "support and assistance in the use of digital communication with authorities, services and smart devices, the purpose of which is to help the customer use smart devices and e-services independently and safely as well as to understand the general principles for digital services." (Ministry of Finance). Digital literacy and skills are perceived as civic skills and ensuring and enforcing these skills is paramount to increase inclusion and independent functioning.

Some sort of digital support has been offered since the first digital product or service has been available. The forms of support and support providers have transformed over the course of time but the main goal has been the same: to help an individual use the product or service in a satisfactory way and to be able to continue the use of that product or service independently.

Digital support can include face-to-face support (e.g. service points, peer support and personal support at home), remote support (e.g. chat, telephone or video assistance) or training (e.g. online training, community colleges or video tutorials). It is also important to note that also guiding people to the providers of required digital support is included because not all are aware of the support existing. (Ministry of Finance.)

### 4.4 Digital support for the visually impaired

People that I met during the beginning of this research project, didn't know the term digital support, hadn't heard it or read about it. In the Association, the term ICT-support is used and that is the parallel term I used in dealing with the members and participants of the survey.



The Federation and the regional associations for the visually impaired offer the most tailored support for the visually impaired and their families. Many rely on their family and friends in every-day life, but associations have educated staff that know the barriers and offer variety of support: courses, lectures of new topics, products or e.g. social benefits, testing and installing of assisting technology, phone support etc. The Association works closely with the assistive technology unit of the Oulu University Hospital.

Leena Vallo (2018-11-02), the ICT- trainer in the Association, told that the focus of the support has moved from group classes to more personal support mainly because the equipment has changed. More people have tablets or laptops and mobile phones, and they need guidance with some specific problems. Elderly people and persons living in remote locations use more phone support or home visits when people living closer to city centre might use the services of the Association at the day-centre.

#### 4.4.1 The operating model of digital support in The Association of visually impaired in North Ostrobothnia

The Federation and Association are non-governmental health and social welfare organizations (NGO) that advocate the rights and equality of visually impaired in Finland and co-operate with international partners worldwide.

The Association offers specialized support and services to visually impaired and people with visual problems and their families. It also practices advocacy work aiming to promote equality and inclusion in the society. Services are provided by The Federation of Visually Impaired and regional associations and their branches. Services are free. There are employed director, membership secretary, a hostess, ICT- trainer and an advocacy expert. The Association offers membership, but most digital support services do not require it.

Membership requires verification of visual impairment because the association offers services based on subjective rights. STEA- funded services require the B-statement and a classification of the visual impairment. These include e.g. home delivered services and some of the assistive devices that can be borrowed or bought. ICT- support is arranged at the day-centre as group or personal support, courses and classes, as STEA- funded home-delivered support that can include assessing, installing and updating hardware or software and even help in choosing and buying a device. Equipment can be arranged to be sent to the Association for maintenance or settings. Phone service is widely used and there is going to be remote support option available soon. Adaptation courses for visually impaired are organized in close co-operation with unit of Assistive Technology in Oulu University Hospital.

A path to the services can be through an ophthalmologist that provides the B- statement, through the Assistive technology unit of the University Hospital, through social services or by direct contact to the Association. Peer- or word-of-mouth- recommendations are highly valued and frequently used. Service planning in social services does not currently consider digital skills or include digital

support as needs for visually impaired. The (life)situation can be confusing and the different operators should work together to ensure that level of support is sufficiently comprehensive.

Customer can have a device (tablet, smartphone or a computer) but needs help in using it. They can be home-bound or have difficulties in moving and mobility functions. There might be difficulties in information technology in general and the training needs to start with the very basic skills. People do not want to feel stupid or useless or burden others and the threshold for asking for help might be very high. The support is tailored individually and lasts as long as required. Feedback is asked to ensure the support is sufficient and customers are encouraged to contact the ICT- support expert if any questions arise.

Organizational activities of special- interest groups appeal because they are low-threshold and mostly free, offer peer-support and purposeful knowledge and meaningful activities in safe environment. It lessens loneliness and exclusion and reinforces independency.

The situation in availability of the services for the visually impaired is unequal in the area of North Ostrobothnia. Over half of the population of 412 665 (Statistics Finland 2019) lives in Oulu area and services in general are focused and centralized. Provincial operations of the association have decreased in municipalities due to lack of resources. Volunteers for the activities is growingly harder to find and the aging of the visually impaired decreases the amount of people able or willing to travel.

The most challenging group are those visually impaired individuals who would greatly benefit from the services but are not within the reach of The Associations services, live alone or remotely without relatives or close-ones and are either voluntarily or involuntarily excluded.

The many participating healthcare or social welfare professionals and authorities have different degrees of knowledge about the services of The Association. This information gap could prevent the promotion of needed services and maintain the fragmentation of the service field.

With a strongly customer-centred model, The Association aims to ensure the realization of rights for visually impaired by providing training, support and equipment for independent and safe functioning in society. In an ideal situation, a one-stop-shop- model works where customer can contact The Association and get the services needed or be forwarded to the attending service provider. The ICT-support expert can make the assessment of the digital support needs separately or as a part of the general service need assessment with the membership secretary or advocacy expert or give a statement for the service plan made by the social services or the Assistive technology unit of University Hospital.

## 5 GOOD PRACTICES

Good practices are understood in many ways and there is no one comprehensive definition. Good practices can be working procedures, practices or interventions and they are not separate parts but rather parts of a network of practices that shape and change one another. One way of valuating good practices is its ability to give others opportunity to learn from it (Vuohelainen 2011).

### 5.1 Definition and features

E.g. Aro, Kuoppala, Mäntyneva and Koivuneva (2004) and Innokylä (2015) have listed features of good practice:

- it is known to function well in its own environment
- it produces value to customers
- it is ethical, economical and effective
- it is innovative or new and better
- it is transformable and generalizable

A good practice should also be:

- based on need or demand
- identifiable and measurable
- developed in interaction with others

The Ministry of Health and Social Welfare identified good practices in one of five government strategic priority projects between 2016 – 2018. According to the report good practice works despite of the service structure, it strengthens people's abilities and help them to reinforce control over their own life. Good practices also result to better performance and lessens the workload of professionals and require a change in protocols for everyone. Good practices should be included into strategies, contracts and work familiarization.

A good practice can be a single thing appreciated by the beneficiaries or a tacit knowledge of employees, something that may be perceived as mundane. (The Institute of Health and Welfare 2018). Good practices may be overlooked due to lack of assessment or analysis. If the practice is a result of a project or an experiment, it can be forgotten before it gets to be implemented or continuously funded. (Saari, Hyytinen, Hasu, Hyypiä, Korvela, Käpykangas, Leväsluoto, Melkas, Nordlund, Pekkarinen and Toivonen 2018, 6.)

## 5.2 Identifying and assessing

The identification of a good practice can be done by anyone, but it usually isn't done without an initiative or tools to do so. It can be a well-planned scheme to capture good practices or a by-product of a brainstorming session. Funders, the organisation itself, co-operating partners or the project group or workforce can all identify or assess the good practices. Usually, the assessment is made by economical or technical measures because that offers concrete results. More human-centred way would be adding quality and value-based assessment that considers effects on the users, organizations reputation and scalability at population level (Saari et al. 2018.)

The criteria for assessing good practices can be divided in five themes according to Innokylä assessing tool (2015): usability, functionality, modelling, validity and process. Aro et al. (2004, 24) explain how it is essential to distinguish the factors existing prior to something declared as a good practice for the process to be able to improve.

Usability means that the practice is developed to solve a real-life problem, that it is relevant and resultive for the target group. It must be unanimously supported by the assessing group. Functionality means that the practice is rather time saving than time-consuming, it doesn't add to costs or is proven to be cost-effective. It must be reliable and testable. (Innokylä 2015.)

When assessing the modellibility of the practice, it needs to be so well documented and recorded that it is applicable somewhere else. Aro et al. (2004, 24) remind that there are numerous good practices that are poorly and unintelligibly documented and therefore not utilizable. The validity means that the practice should not be overly tied to time, space or environment and that it has been developed with the notion of circulation in mind. The process as criteria means that the practice has been reflected upon, analysed and learned from in a process like manner to result in the best possible outcome. (Innokylä 2015.)

Finnish Institute of Occupational Health (TTL) has composed an assessment tool KUMOUS as a part of a research project in 2017. The "experiment to practice"- workbook is an assessment frame and practical process description that can be used in different kind of experiments to identify and document good practices. It emphasises wide, multi-valued co-operation that is done consistently throughout the experiment to ensure learning and documentation of the process. (Saari et al. 2018.)

## 5.3 Service design in developing good practices

Developmental projects co-ordinated by SOKRA and funded by European Social Fund (ESF) aim specifically to improve individual's capabilities and operability and to prevent poverty and promote inclusion in Europe. Objective is to root the discovered good practices permanently into service systems by improving communication between projects, funders and decision makers. Handbook of service design (Hiltunen 2017) offers tools to identify, create value and document service products resource-effectively and customer-centrally.

According to Hiltunen (2017), service design is all about understanding customer needs. Service is non-tangible product, so the features and components that effect it, can be difficult to name without concretisation. It is also possible to enhance and simplify existing service e.g. deleting overlapping procedures or focusing on customer experience by identifying the contact points. (Jaakkola 2019-21-02). The process of service design progresses from general service description to specific service practices.

Service path describes the individual way a customer is served from the first contact until service is not needed anymore. (Hiltunen 2017, 14-15). It answers to questions like: how does customer learn about the service? What is the first contact like and what kind of feelings can arise? What motivates to using services? What are the things that hinder or promote the participation? It is notable that service path covers the phases before, during and after becoming a customer.

Service model is like a map that leads to the desired goal. It reveals the needed resources and describes the practices used. It is documented in a way that it can be executed following the description. (Hiltunen 2017, 16-17.) Service model is generally presented in a form of process chart.

The valuation of the effectivity is a part of the process and measures of assessment can be e.g. service independent general customer satisfaction or effects to cost structure or service specific individual customer effects and cost-effectiveness. (Hiltunen 2017, 20–21).

#### 5.4 Good practices in digital support

The service providers are the first, most logical digital support providers. There is e-mail, chat, phone, social media or personal support available, even around the clock these days. There are educational video tutorials and guidebooks available online. Some even offer online courses for their products. This support is general in nature and does not consider the different barriers users might have.

Authorities have a duty to provide support for their services and public sector also provides different kinds of supportive services, both free and with a fee. Especially libraries have become centres for digital support and guidance. There are a lot of third sector actors that provide digital support. Associations, organisations, groups, networks or communities provide variety of support, usually for their members or regular visitors based on their needs and requirements.

Peer-support is shown to be effective because it is available, low-threshold, understandable and free (usually peer-support is based on voluntary work). Peers have more understanding about the conditions or barriers people suffer from and can offer more grassroot- level of support. (Vuohelainen 2011.) When using peers or volunteers there needs to be clear rules of responsibilities and awareness of the restrictions of the capabilities and skills.

#### 5.4.1 AUTA- project

An action plan by Prime minister Juha Sipilä 's Government Programme set five strategic priorities to ensure sustainable growth and resources for public services. One key project was Digitalization of public services. AUTA- project (2016-2017) was set to develop a proposal for an operating model for good practices of digital support for citizens to find and use digital services and support the providing operators.

Project identified and divided difficulties in using digital services in three categories: either lack of equipment or lack of skills and access. The first two are mainly caused by resource insufficiencies and barriers like socio-economic status or location, language or a disability. Access refers to the ability to physically access services (transportation, time, facilities). Difficulties were also recognized to be caused by poor design of services. (Ministry of Finance.)

Project resulted in division of the customer needs for support in four levels:

1. Self-service; a person who can and does use digital services. Value by development of digital services.
2. Light-support; person who can and does use services but needs support. Value by guidance to appropriate support e.g. chat or service providers support.
3. Strong- support; person who cannot and does not use services and needs support. Value by remote support e.g. via phone or personal support at service points (peer- support, courses etc.)
4. Other service channels; person who cannot use digital services. Value by ensuring access to services with alternate channels (personal service or phone service).

The operating model leaves out the quality of user interface, advocacy and authorization, support given by friends or relatives and strong identification on the basis that this operating model aims to develop the skills of an individual rather than structural challenges that need to be solved as well. (Ministry of Service.)

Provision of support is divided co-operatively among authorities and public service providers (legislative obligation), third sector operators e.g. associations and private companies to ensure that a person can use a digital service independently and securely and to possibly manage with lighter support in the future. New operators and innovations are welcomed to participate and develop the model while the main responsibility of co-ordination is with Digital and Population Data Services Agency (DVV) and supervision is with Southern Finland Regional State Administrative Agency (AVI). (Ministry of Finance.)

#### 5.4.2 POUTA- project

As one of five sub-projects to the government AUTA project, a regional North-Ostrobothnia pilot project POUTA was established to map the instances providing digital support and guidance and further develop a network of low-threshold places for people to get assistance with digital problems. The aim was also to record good practices that already exist and develop an action plan for the model to be implemented nationwide. The POUTA- project lined an operating model for the digital support by describing how it can be organized in Finland most effectively reaching the ones needing it the most.

As AUTA- project outlined, the co-ordination and supervision are done on national level by DVV and AVI. The region is responsible for maintaining digital support network and communications among the municipalities that co-ordinate support either independently or as a part of the regional HYTE-group (HYTE= hyvinvoinnin edistämistyö) and are responsible for the accessibility of the support. (Ministry of Finance.)

In the first part of the workbook for the providers of digital support, a list of questions helps to determine the needs for support e.g. by target group and to list the current providers of digital support and how-to co-ordinate the network. Questions are also asked to help promote the support to citizens and strengthen the skills of the public service providers. Since volunteers play a major role in provision of digital support, ensuring their recruiting and training is essential. Niemelä 2020-08-01.)

The second part guides to planning and starting the provision of digital support. It lists things that need to be considered e.g. responsible parties, the scope of the support and who co-ordinates it and if there is possibility to co-operate with another provider etc. (Niemelä 2020-08-01.)

At the end of 2019, a funding for a sequel project POUTA 2 (2019-2020) was granted. This continuation project aims to ensure that the work of support providers can continue by rooting the operations as a part of the municipalities health and wellbeing agenda (HYTE). Project focuses on digital support for young people and agreed special target groups that need assistive technology. (Board of the Council 2019.)

#### 5.4.3 Ethical guidelines

The ethical guidelines for digital support was published by Digital and Population Data Services Agency (DVV, prev. Population Register Centre VRK) by the request of the support providers. It establishes the responsibilities of both the provider and receiver of digital support. It presents a model where the provider has defined levels of protocols for providing support depending on the skills, privacy and the nature of the customer needs. This is for the safety of both the receiver and the provider to avoid misuse or exploitation or misunderstandings. The model also highlights the responsibility of the receiver in e.g. services needing identification or handling personal data. (DVV.)

Oulu library has modified the ethical guidelines for their digital support in form of traffic light- model (Rönkä 2019, 13-14) where the guiding duties are coded in red, yellow and green according to the responsibilities and customer needs. Green includes normal support and guidance in terms of skills and responsibilities and are parts of good customer service. These duties can include e.g. help in finding information or referring to the responsible authority for support. Yellow can include some specific duties inside specified conditions (e.g. time or requirement to use personal data). This service brings added value to the customer. It can include e.g. help in choosing a device or using it independently. Red means duties that are not included in the support description and are not responsible or legal. This can include e.g. help in something that might be harmful or unethical.

Concerns for how digitalization effects people´s daily lives resulted in the Advisory Board (Digi Arkeen) proposing a check list for the developers of public digital services (Ministry of Finance 2019, 13-14):

- there is no "average user"
- recognise your own assumptions and stereotypes
- Entice. Never force
- note the different paths and learning processes
- the word "reform" can be a red flag
- emphasize safety, co-operation and support
- remember it´s about people

The report also included 12 proposals for solutions in ensuring equal opportunities in digitalization. These are listed:

1. Ensuring alternative ways of transactions and sufficient funding for that
2. Ensuring widespread provision of services in plain language
3. Implementing user-based service design
4. Ensuring enough resources for digital support nationally (especially for the third sector)
5. The availability of digital testing platforms
6. Integration of immigrants
7. Strengthen co-operation between libraries and associations in provision of digital support
8. Ensuring cognitive accessibility in digital services
9. National protocols and co-operation in implementation
10. Identification made accessible
11. Research needed about the effects of digitalization widely in society
12. Research about the effects of the national model for digital support on digital divide.



## 6 RESEARCH METHODS

### 6.1 Purpose and execution

The purpose of the study was to map the current awareness and use of the digital support and digital health services among visually impaired in North Ostrobothnia and produce new information for perspective for development. Literary review, theory base and the conclusions from the POUTA- project act as reflecting surface for the analysis of the survey. This study is made using qualitative research methods with features of developmental research study that aims to solve practical problems and to provide new ideas, procedures or solutions (Ojasalo, Moilanen and Ritalahti 2014).

Qualitative research uses other than just quantitative relations of the variables to present a hypothesis and argument the interpretations (Alasuutari 2011). My study is applicable research aiming to further develop the accessibility, use and awareness of digital support among visually impaired. Research also has features of a case-study because it involves the operating people as forces in the process (Kuula S.A. 2020). Analysing the results of the survey was made using triangulation based on frequency distribution supplemented with open text answers and reflecting it to theory base.

The research questions are:

1. What kind of digital support is available at present?

This question is asked to get an idea of the current knowledge of the participants. How do they see and define the term digital support? They might use some form of support but are they aware of the variety of support that is available? Usually, support is given by a peer or by a relative, but what about the public and private providers? The fact that public service providers have an obligation to offer support for their services, does not mean that citizens have found them or know where to look for them.

2. What kind of support is needed and how often?

This question is relevant for it tells the areas the visually impaired need support with and the frequency they need it. This is a matter of focusing resources and designing the services.

3. What sort of digital health care services are accessible at present?

This question maps the knowledge about fast emerging digital healthcare services. Many providers present with new channels of service by moving them to websites and mobile applications but does not always consider the accessibility of their services or the suitability for the end-users.

#### 4. Are there some services that are needed, but not accessible?

If citizens don't have a channel for feedback or don't know how to use them, service providers have no idea of the barriers regarding the use of their services. The most efficient way would be including the end-users already in the designing stage of products and services rather than fixing them afterwards. Provision of adequate support for the use of devices and services helps the implementation and acceptance of the digital era.

## 6.2 Survey as a method

The research measure was a structured webropol-survey with options for free text answers in part of the questions. The reason for choosing this method was the fact that it was familiar and most effortless to the members of the Association (it had been used in previous studies and questionnaires for members) and also the fact that Savonia University has student license for Webropol with which the surveys is easy and free to manage. The tight schedule was also one factor that promoted the choice, the initially planned method of personal interviews was abandoned as there would have not been time to organize interviews in satisfactory manner. The respondent's fatigue was a real threat, for the members had had a survey- and questionnaire- filled spring already.

Interview is a qualitative research method meant to collect opinions, attitudes and experiences of the respondents. (Saaranen-Kauppinen & Puusniekka 2006). In this survey the aim was to gather the experiences of volunteered visually impaired individuals. When the sample is small the theory is constructed on the research material side by side with a scientific theory base.

Digital surveys have become popular most likely because they are both easy to make and answer to. You can create and answer them with almost any device and from anywhere. The downside is, that there are so many surveys, questionnaires, opinion polls etc. that people get tired of answering or don't consider the answers that thoroughly. It is also noticeable, as Kuusela (2009) reminds, that digitalization has made possible to conduct web surveys that do not count for good research practice since the sample is not based on probability.

In my survey, I have tried to give as much guidance and information as possible and in phone interviews, also clarify the questions or choices, if necessary, without influencing or directing the participant.

## 6.3 The sampling plan

According to Moser and Korstjens (2018), there are three key features to be considered in successful qualitative sampling plan. Firstly, participants are sampled deliberately to provide most information of the phenomenon. Secondly, sample size must be fitted to the purposes of the research. Thirdly,

the sample can be adjusted during the study if e.g. criteria is altered, or the sampling sites are changed. This can be done if the researcher provides reasoning for the choices and documents it. The sampling is sufficient and useful when the participants and settings provide the information needed for understanding the phenomenon.

The participants in this study were volunteers and that has some effect on the sample, to the size of it and the exclusion of the persons that do not use IC-technology or digital services. It was not possible to use the member database of the Association because of the GDPR, so the only viable option was to recruit the sample by personally promote and invite people to participate. The topic narrows down the number and the variety of participants, it is expected that participants have some experience of digital services or digital support and have skills and equipment to complete the survey. This follows the protocol of selective sampling.

For getting people to participate to the survey, I visited three meetings of the visually impaired. One was a club in Ii, a municipality 35 kilometers north from Oulu. They gather in an unofficial meeting once a week to do arts and crafts and socialize. They also arrange outings to requested events or visitors from various fields of expertise.

I visited them with the head of board in the association, my thesis supervisor Katja Kuusela who spoke about the services of the association for members and reminded that the association is open for everyone (no requirements of classification for visual impairment). When meeting visually impaired people, you cannot know the level of disability, nor the need for help or what kind of personal space they want to maintain. You need to remember that they cannot see and therefore do not react to your expressions or body language. To speak directly and state who you are addressing helps a lot. Light touching while approaching someone with visual impairment and describing the surroundings and leading a person were the things most unfamiliar to me.

I also visited a meeting at the office of the association directed to working age persons, named club 1863. They had a theme discussion about ICT- services and applications. This meeting gave me a good idea of the differences in the digital inclusion. People who work or study are much more open to the changes and are familiar with the technology even embracing it. The association has been involved in e.g. developing the accessibility of OP bank mobile application.

The third meeting, named Porinakahvila (Chit-chat cafe), had the most participants, probably because there was a hearing-aid lecture held before my presentation. It was mostly elderly people that were mostly not that interested in the subject of my study, but I got to see and speak to those people as well.

## 6.4 Constructing the survey

ICT-trainer Leena Vallo from the Association helped me with constructing the survey. She told me the types of questions that suite the visually impaired. Text type questions are suitable, but there needs to be detailed instructions for answering. From optional questions type, the matrix by scale and the multi-choice question type are suitable, drop-down menu or picture-choice questions are not suitable. She also showed the way the survey is delivered and answered anonymously, according to the data protection regulation (GDPR).

I tested the survey with two visually impaired volunteers and one sighted employee working in The Association. They gave suggestions about the construction and functionality, length, accessibility and hints for the instructing of participants. I also wanted opinions about the formality of the addressing style and appropriacy of the questions.

Designing a survey for the visually impaired, there is no need for effects. Usually, the simpler the questionnaire is the better. Text-format is the most accessible form, PDF should be avoided because it does not work with most screen reading software. The instructions and the covering letter must be informative and guide to filling the survey. Both the survey and the cover letter are in Finnish and are as attachments in the end of thesis.

The survey is twofold by theme and the first part was further divided to digital support in general and services provided by the Association. The second part dealt with the use and accessibility of digital healthcare services. The themes and questions were formed by the research problems and defined by the visits in the gatherings of the visually impaired. The digital divide has been established as a barrier and the unequal position of the disabled in the society and in digitalization has been recognized. The qualitative survey acts as one point in triangulation with the scientific research and mapping.

## 6.5 Conducting the survey

The Association had a busy spring of 2019. They had many organizational duties including a large member survey for basis of funding. Also, there was another master's student who was granted a survey permission earlier. We had a joined meeting with the board and defined the research problems and methods so that the two studies wouldn't mix in the minds of the participants and to avoid respondent fatigue. We also discussed the schedule and postponed the timing of the survey to accommodate the associations timetable.

The survey was filled by the researcher during the phone interview at a chosen time and day or by the respondents themselves provided with the link to the survey by e-mail. The volunteered respondents were invited to participate by visiting the areal meetings of the Association and getting phone numbers to arrange the interview later or e-mail addresses for sending the link to the survey. With volunteering the respondents also consented to the use of their contact information for the

study. Suggested by my supervisor from the Association, I added a gift card of 15 euros to be allotted among participants acting as an incentive.

The survey was sent by e-mail to 12 respondents and phone interview was arranged with three persons. Total of 11 replies were registered. Loss is a progressive trend in interviews in general. This is due to difficulties in getting people to consent and to be available to the researcher. (Kuusela 2009).

There was some sort of technical problem in the Webropol-site at the time the survey was open, so I got messages from the respondents that they couldn't access the survey. I sent the link to the respondents again in a few days' time. In one of the phone interviews, there occurred a problem when the survey didn't let me continue after about halfway in the survey. I had luckily saved the answers so far and we were able to schedule a follow-up call to complete the survey.

## 6.6 Analysis

### 6.6.1 Triangulation

When analysing a small sample, it is important to combine several methods to describe the findings. (Moser & Korstjens 2018). This research applied small-scale triangulation using the frequency distribution diagrams and open answers from the survey combined with the theory base. In triangulation the reliability of the study is strengthened by using multiple perspectives and materials. This can create a situation where contradictive results about the same phenomenon can apply. (Saaranen-Kauppinen & Puusniekka 2006). Survey, statistics, previous studies combined with conversations and observing in the meetings give a sufficient view of the phenomenon.

In this study the analysis of the survey was made with Webropol- report and analytics tools which was then exported as excel-format to be further examined. A theory-bound content analysis does not lean strictly to the theory but seeks confirmation or explanation for the interpretations from the findings. (Saaranen-Kauppinen & Puusniekka 2006). Frequency distribution diagrams were converted to written format for summarizing the results and open text answers were listed to be used as quotes in the report. I do not present any diagrams in the text because the thesis is designed to be accessible, but instead the analysis report is as attachment of thesis.

## 6.7 Reliability and ethics

The reliability of a research means the ability to measure the phenomenon as it was intended and to be repeatable. To carefully parse and demonstrate the phases and choose the indicators makes it easy to re-use the material. (Menetelmätietovaranto 2008). The webropol-survey was chosen because it is previously used by the Association and therefore requires less learning from the respondents. It is also a digital form and as such, fits the theme of the thesis. By choosing triangulation for a method, even small sample gives new information and adds to the reliability of the study.

Validity means the ability of the indicator to measure what is meant to be measured. The set-up, the sample and the timing are important to operationalize the research. (Menetelmätietovaranto 2008). E.g. use of the Likert-scale increases the validity. Choosing the scale and understanding the built-in presumptions in the questions and answering options are important. In a survey that gathers information, opinions and attitudes the use of I do not know-option is a logical part of the analysis without weakening the quality of material. (Jokinen and Järvensivu 2014). According to Alasuutari (2001) in qualitative research the gathering and analysing of the material happens parallel and the research questions are defined during this process. Timing was planned to fit the schedule of the Association to minimize the respondent fatigue and to avoid confusion when there where another survey conducted overlapping.

Bengtsson (2016) wrote that according to Burnard (1995) self-reflection is an essential part of qualitative research regardless of qualitative method. It indicates that the researcher is aware of the subjectivity of self. In an article by Elo, Kääriäinen, Kanste, Pölkki, Utriainen & Kyngäs (2014) examining trustworthiness of qualitative data in research the importance of considering own pre-understandings was emphasized. The planning and analysing process must be carefully and meticulously prepared in best interest of the study in order to minimize any bias of own influence. I have been actively processing my own presumptions and considering the objectivity of my perspective during my thesis process. I have been discussing things with my supervisors and making and reflecting on notes about the progress of the thesis. The notes served both as documentation and collection of important notions, questions and remarks regarding the thesis process. The visits to the meetings of the visually impaired were very informative regarding the many ways the barriers are present in the daily life and the experiences individuals have.

The ethical aspects of the study are related to the research topic itself, the gathering of the information and the privacy of the respondents. Visually impaired are a fragile target group. Firstly, the disability affects the communication and interaction and the threshold of meeting and trusting new people is higher. Secondly, the interest towards minority groups is sometimes linked to some(ones) agenda and purpose that may not be beneficial to the target group itself. Also, the understanding of the responsibility of the conductor while handling and using the data is crucial. Good research practise is required and that means to respect the integrity of the respondents. (Pelkonen and Louhiala 2002, 129.)

The survey was delivered as a public weblink to the respondent's e-mail. It ensured the anonymity of the answer (there were no contact information asked). The willingness and contact information to participate to the gift card draw was asked when they volunteered for the survey and this data was destroyed afterwards. The questions were designed, and answers presented so that no individual answer could be identified or linked to a person. Physical work papers were destroyed, and electronic materials deleted.

## 7 RESULTS

The total of 11 answers were registered out of the 15 participants who volunteered to the study. Three of those were phone-interviews and eight answered with the link to the given e-mail address. Seven participants were male and four were female, age ranging from 25 to 75 years.

### PART 1. DIGITAL SUPPORT

#### 1. What, in your opinion, is digital support?

Digital support is defined by e.g. DVV and UN as support for acquiring, using or finding an electronic service or product or information on above-mentioned so that an individual can function equally in society. It can be group or personal guidance, an online-course or a remote support by e.g. chat, email or phone.

Over half (6 out of 11) of replies identified digital support as help in acquiring or using a device, product or service with personal assistance or group support and over third (4 replies) thought it to be support given remotely (by phone, e-mail or chat). 2 of replies named online course as a form of digital support.

It should be noted that when discussing with participants and promoting the survey, the term digital support was not familiar. In the Association, the term ICT- support is used to describe the given assistance and it was considered when informing the participants in answering to the survey.

#### 2. What kind of digital support do you use?

Digital support today is given when e.g. purchasing a device or service, more often as a part of the maintenance package or guarantee period. Most companies have a website or phone service where you can get help. User manuals are often provided as electronic versions. Public service providers are obligated to guide in the use of their services and inform where this support is available. Visually impaired can have beneficial devices e.g. for education or working purposes and there is training available for this equipment. The Association provides tailored digital support for the visually impaired.

9 replies out of 11 reported to using digital support provided in groups and/or support in using a product or service by a personal assistant, service personnel or a relative. 5 replied having used home visit and chat/phone support from service provider. 3 replies named personal support outside home or a course/webinar.

For a visually impaired person, familiarity and routines are key elements in managing everyday life. Many depend on relatives, spouse or a friend with completing tasks like paying bills or applying for benefits or making an appointment.

*" a nerd-friend has helped me"*

Public service providers are required to have a guidance to their services available and a channel for giving feedback or report a missing or dysfunctioning service. Private service providers are not obligated but would be wise to make services available and accessible to everyone. (UN, European Commission). There is an estimate of 650 000 - 750 000 people (11 – 14% of population) in Finland that would benefit from accessible and e.g. plain language services. (Kehitysvammaliitto).

In a study that mapped the digital inclusion in the age group over 75 years of age in Finland (Ikäteknologiakeskus 2019), almost half uses digital services regularly and 87 % of those feel that they get support when they need it. 20 % of the age group had some experience of computers, but most of them (96 %) had difficulties in asking or receiving support in use of digital services. Nearly 25 % of age group had never used a computer and 80 % of those had to rely on relatives in transactions. Every third of these had difficulties in asking or receiving support. Even the ones that had help from the relatives, stated that help was not available when needed (unexpected, instant need) and they did not want to ask for help too often. They also were not aware of the providers of the digital support (associations etc.) or they were not eligible for home delivered support.

*" The main problem is that I am no expert with computers. Lack of dexterity restricts the use of text messages and lack of skills prohibits the use of services."*

3. For what tasks you need the digital support the most?

Dealing with the authorities and acquiring of new devices were the most common reasons for needing digital support (4 replies out of 11). Services are increasingly being provided online and personal services are reduced and risen in price. Benefits, studying and taxation requires regular filling of forms and applications. Not all authorial paperwork is manageable by the person themselves and they need help in using the credentials, finding and filling the needed forms and adding attachments. The credentials are the most used personal identification protocol today that does not support the transacting on behalf of another person. Services that require identification often have a time limit for completing the session that does not consider the extra time needed when working with assistive technology.



*" It is difficult for an elderly person with visual impairment to learn to use a computer or credentials or other complicated things to use electronic services safely."*

Also, the acquiring of new devices can be difficult. Not many stores have knowledge about the features required by visual impairment and most times there needs to be assistance if a person wants to go shopping for e.g. a phone. Peer-recommendations are strong influencer and association is spreading the word on latest or useful options.

Second most replies (3 out of 11) identified healthcare services, banking services and installing and using of applications as tasks they need digital support with. 2 out of 11 replies mentioned communication or dealings regarding assistive technology and 1 reply mentioned the use of social media as a reason for needing digital support.

According to Rehabilitation reform committee report (Ministry of Health and Welfare 2017), fragmented rehabilitation processes leave clients lacking information about available services and unequal provision of opportunities. If a person is not eligible to assistive technology that would be beneficial, it may be too costly to acquire with personal funds. The public sector as well as private companies are struggling with resources and pressure of cutting costs. Even the assistive technology is increasingly managed remotely after the initial dispensing and the dispensing is concentrated in the district hospitals.

*" Digital support directly to end-users should be provided more by the manufacturers of the assistive technologies"*

4. What is the main reason you need digital support?

6 out of 11 replies revealed that there was a tablet, smartphone or a computer, but help was needed in using it. 3 replies indicated that electronic services were not operable with assistive technology and 2 replies stated that they either did not have credentials or weren't able to use them. 2 replies also mentioned that they were unable to find services without help.

*" Finding the features of new devices"*

*" Finding some specific thing without waiting"*

63 % of Finnish people aged 65 - 74 years and only 27 % of people aged 75 – 89 have a personal smartphone. 54 % of households have a tablet computer and 87 % of households have some sort of computer, but there are regional, socio-economical and infrastructural differences that causes dispersion. (Statistics Finland 2019.) A majority of the visually impaired are senior citizens so the challenges only increase. Navigation and screen reading are shown to be problematic and touchscreens

are challenging to visually impaired persons and many depend on voice controlling. Traditional keys are more useful, but it takes more getting used to a new device than a sighted person.

*" The screen reader does not interpret all required lines, fields or numbers or they are misinterpreted e.g. if there is a unit or abbreviation after the value."*

Despite the efforts, not all electronic services are operable with the screen reading software or other assistive technology. Therefore, support is needed with new devices, software or e.g. after updates. Also new forms of service, e.g. homedelivery or door-to-door- services would benefit larger groups of people.

#### 6. What digital support providers can you identify?

This question had unlimited amount of answers, the idea was to collect all the support providers the replier could think of. The Association was mentioned in all replies as provider of support for the obvious reason it is the primary source of support outside home. Also, the frequent use of authorial and banking services as well as popularity of libraries explain the awareness of these support providers (8 out of 11 replies). Digitalkkari is a form of digital support provided by Oulu library, but was mentioned in only one reply. This suggests that not all forms of support are widespreadly known or not associated with certain providers. It is important that citizens know where to get and ask for digital support and that they know the differences in the provided forms of support. Visually impaired are a marginal group that need very specific aids, devices and assistive technology and support and that kind of expertise cannot be expected from all the providers of digital support. The knowledge about the different support providers should be widely available to enable directing to the right kind of support.

University hospitals and other healthcare guidance e.g. nurses phone support was mentioned in 7 replies out of 11 and municipal healthcare centres in 5 replies. Kanta.fi- and Suomi.fi- platforms were mentioned in 4 replies as well as health and welfare associations, but e.g. OmaOlo.fi- website was mentioned only once.

In the operating model of digital support, Ministry of Finance concluded that the co-coordinative responsibility lies with DVV and that Suomi.fi- website would be the primary source of information about the providers and forms of digital support. In course of this study, not many had heard about Suomi.fi- website and none had used it. Problem might be that it is a relatively new platform and that with time and promoting it will become familiar. Still, to those citizens that can't or aren't able to use electronic services, it will be unavailable.

The municipality was mentioned in 6 of 11 replies as well as assistive technology providers and other digital service providers. Kansalaisneuvonta and insurance companies were mentioned in 3 replies. Only one or two mentions was made for SeniorSurf.fi- application and residential or interest groups/clubs.

Questions 7. and 8. were about the Association of Visually Impaired in North Ostrobothnia.

As was expected, the services of the association are frequently used and valued reasonably high among visually impaired.

In the first question repliers were asked to grade the performing of different areas of ICT- services provided by the association and the second question asked them to estimate the importance of the different areas of support. The replies estimated the advisory of the ICT- services in newsletter important (4) or very important (5) and graded the performance good (4) or excellent (5). The advisory in social media was estimated little less important (4 very important, 2 important, 3 neutral and 1 satisfactory) and performance was graded lower (3 excellent, 2 good, 2 neutral and 2 do not know).

The ICT- services were considered very important or important to both individually and to the members by 10 replies. Due to the specific nature of the needs of the visually impaired, a special service association is the most logical and familiar, sometimes even the only source of support. Many relatives and friends also contact the association for vision related problems on behalf of close ones that are not within services yet.

The availability of personal support was tough to be good or excellent in 9 replies. One estimated availability to be nor good nor poor (3) and one replied do not know (6). When asked about the importance of personal support, phone support was considered important or very important and support by home visit very important, important or neutral.

5 out of 11 replies estimated that their need of support was noticed excellently, 1 replied that it had been noticed not good nor poorly and one reply stated not knowing (6). In group situations, support was estimated to be very important in 5 replies and important in 4 replies but was experienced not always to be sufficient (1 satisfactory, 2 neutral and 1 do not know).

Peer support was thought to be important or very important in 10 replies, only one reply graded it neutral. The performance of peer support was grade good or excellent in 9 replies, two replied not knowing. The Association had volunteer peer-support provided by the Federation in the 1990s that was welcomed and well used and resulted in e.g. development of computer courses that was progressive at the time. Sadly, due decreasing of resources, this service was gradually cancelled. There is a hope to revive this form of volunteer- support that could answer to the demand from the provinces and the activation of the digitally excluded visually impaired in the area.

The importance of the support in managing everyday life was graded important or very important by 10 replies, only one answered somewhat indifferent (2). The performance of support was mostly (5 out of 11) estimated excellent and good (3 out of 11). 2 replied neutral and 1 did not know.

By doing three surveys as phone interviews, it was expected that the participants would want to talk outside the structured form. When asked to grade the services of the Association I registered also the free comments as they seemed obviously notable concerns.

*" It would be important to get new information about new devices e.g. phones."*

*" I am hoping that ICT- expert would come to `the provinces` and tell about the new things"*

*" Digital support directly to end-users should be provided more by the manufacturers of the assistive technologies"*

Even with well working practice of support, there is always ways to improve the operations. People living in provinces struggle with decreasing services as it is, and all support is welcomed. Oulu- centred operations do not suite everyone and need for support in near locations (own local branches) were hoped for in the comments.

## PART 2. DIGITAL HEALTH SERVICES

### 9. What of the following digital healthcare services have you used?

There is endless amount of information available online but finding the right service can be difficult. Some people still prefer personal service or are hesitant to use electronic services. Test results, treatment details and medication are available in MyKanta- service. People use wearable sensors and health applications, find services and make appointments online.

The most used digital healthcare service was a website of a healthcare provider (e.g. online booking system) in 8 replies out of 11. Gaining information online was the second most used service (7 replies out of 11). Self-monitoring measurement or a mobile application was mentioned in 4 replies and remote doctor´s appointment in 3 replies. Nurses remote appointment, a use of bio measuring sensor e.g. smart clock and online health survey was mentioned in 2 replies. One reply stated that none of the mentioned services or devices was used.

### 10. How often do you use digital healthcare services?

There was dispersion in the answers. 3 replies stated the use appr. once a month or a few times a year. Two replied using services semi-annually. 1 mention was given to not using digital health services at all, using them a few times a month or several times a week.

There are of course many aspects in reference to this question. If person has multiple conditions or needs frequent monitoring, there is certainly a need for more personal services. When using a bio measuring device or application, the use of digital services is more often daily. Also, a person with under-aged children may need services more frequently when transacting as a parent. On the other

hand, multiple channels can be used for different kind of health services and digital services are just one part of that. It should also be noted, that even with informing participants what was meant by the digital healthcare services, not all incidents are comprised as such and the frequency of use can be difficult to estimate.

11. How easy were services to find and were they accessible?

Majority (4 out of 11 replies) stated that services were accessible, but there were differences in finding them. 3 replied that services were both found and accessible. Two stated that service wasn't found at all and were therefore not accessible. 2 replies mentioned that services were available, but not accessible with devices at use.

Studies (Ministry of Finance, program 2017 - 2021) show that digital services in general, have modest accessibility level at present and that it depends strongly on awareness of the producers, distributors and developers of the service. It should be regulated with unified and clarified legislation as well as authorial guidance and informing about the benefits of accessibility to every citizen. Accessibility needs to be a part of quality in service production.

*" The way websites are designed; their appearance is often confusing and illegible."*

The use of Design for all is not a norm in developing digital services and products but rather an afterthought that is costly to repair. The visuality, the structure of pages and e.g. forms that are based on intuition rather than logic and picture objects that have no description leave part of the citizens outside the reach of the services.

Sandboxes, test environments and experimenting would be a way for the developers to see how the design should be modified to meet the different needs of different end-users. Good example is the OP bank testing lab in Oulu, that co-operated with the association to create accessible net banking application.

12. Open answers: what are (in your opinion) main barriers in using electronic services?

*" There are so many options/functions and information that outlining the whole is difficult."*

These answers reveal some the barriers visually impaired face with digitalization. People have different kind of experience and skills for using technology and to use digital services, that there is a need for a more profound training in basic information technology skills. Lack of interest or funds in acquiring a device and learning to use them can prohibit the use of digital services that might improve the independency and inclusion. EHealth and technology literacy are not necessarily easy to obtain.

*" Contrast is often poor for a person with low-vision. White background with green text does not work. There needs to be more text in plain language, so more people would understand what they read."*

The use of plain language is surmised to help between 650 000 – 750 000 people in Finland to be able to engage in services. (Kehitysvammaliitto). Aging population and many disabled groups as well as immigrants could benefit from easier, more accessible services. For a visually impaired, many visual features are prohibiting the use of services. The design and structure of e.g. forms can be impossible to manage or use with screen reading software. There also might be a time-limited session that pose challenges to using a service. Even when there are help and guides and a demand for accessible design, the developers or providers of services have not considered the end-user.

*" The strong identification, help is needed in every stage to confirm."*

This is a major problem that concerns multiple groups of people. Credentials require eligibility and they do not allow on behalf transactions. If you do not have an acceptable form of identification, you cannot be granted other form of identification. Also, only a few instances provide a training environment for the safe trial of the service.

13. What option do you relate the most?

Most replies (7 out of 11) were in the opinion that the fact that health services are moving to electronic environments is mostly a positive thing. 3 replies stated neutrality over the fact and 1 reply stated the opinion of change being a negative thing.

Open answers to elaborate previous answer:

*" Accessibility should be further improved"*

*" Personal guidance should be available"*

*" As a person with visual impairment I wish an easier access to these services, but how...?"*

*" I can't say if someone has difficulties. Personally, I can use digital services, but I understand if it causes problems to many."*

*" I fear that digitalization decreases the face-to-face- services, like has happened in banking. There are still a lot of people who can't use digital services independently. There should be an authority that would assist with digital services, in my opinion this can't be outsourced to relatives, personal assistants or care personnel."*

Statistics Finland predicts that in the 2030 the amount of people over 65 years old will be over 25% (at the end of 2016 it was approx. 20 %). The youngest portion of this generation can have better digital skills acquired in working life than previous generations and wealth and willingness to invest in personal health. Silver economy refers to opportunities created by aging population and their consumer behaviour and effects on public economy. (European commission report). Digital healthcare is a fast-growing business and shaping the healthcare sector forcefully but people with disabilities have been overlooked as a potential consumer group.

## 7.1 Making good practices better

It is established that digital support works relatively well at least for some of the visually impaired persons in North Ostrobothnia. There are, however, great differences in individual skills, life situations, readiness and attitudes when it comes to managing electronical services. When the change is coming from above and outside, even involuntarily, the resistance is greater. Informative, inclusive and positively attentive approach is more likely to bring people to the services and increase individuals influencing opportunities in society and community. Following are areas where focus should be directed from both The Associations and Digital support organizers points of view.

### COMMUNICATION

There needs to be more and more organized communication through multiple and varied channels to reach larger crowds:

- between the Council of Oulu Region and providers and organizers of digital support
- between providers and organizers
- to and from citizens
- to and from professionals
- between the recipients and providers of support (=feedback)

Fact 1. There are visually impaired people that can't find/are not aware of the services but would benefit from them.

Suggestion: marketing of the services in local newspapers or other media (directed also to the sighted population) could raise awareness of the services of the association e.g. relatives can read about services. Also establish and increase co-operation between other associations to benefit e.g. from joint resources and synergy of promotion. Further strengthening the co-operation between municipalities, authorities and companies to promote the digital support.

Fact 2. Not all professionals are equally aware of the services and do not promote or know to direct customers to the right services.

Suggestion: provision of training and guidance for the professionals about the services. Co-operation with schools and student organizations for increasing awareness.

Fact 3: there are people that are visually dysfunctional or suffer from vision problems but are not (yet) visually impaired and would benefit from the services provided by the association.

Suggestion: more visibility through co-operation with organizations, companies, other associations or municipal operators to promote the services to larger target group. E.g. optical stores examine people that get referred to ophthalmologist for reduced visual acuity. Informative lectures in schools or geriatric facilities about the vision and visual problems raises awareness of individuals and promote the importance of preventive measures e.g. safety equipment, regular eye examinations and managing eye-conditions. At the same time, it dissolves fears and promotes tolerance towards disabilities.

## RESOURCES

Associations work with limited resources and balance with ensuring sufficient funding, distributing the operations effectively and equally and attracting and motivating volunteers. The Association is funded by Ministry of Health and Social Welfare in form of STEA- aid (profits from Veikkaus used in promoting health and wellbeing in NGO's) and additionally they rely on beneficial testaments and donations.

Fact 4: It could be a vulnerability to having only one person available for support.

Suggestion: reviving of the volunteer-based peer-support would help in aiding the visually impaired in the provinces and other locations. It would strengthen the inclusion of both the receiver and the provider. Offers possibilities to delegate and organize the levels of support and opens the possibility to promote and sell the expertise.

Fact 5: there is a need for more information and guidance from the ICT- support in the meetings in the provinces.

Suggestion: recruiting and actively finding volunteers to operate and visit the meetings in the provinces to ensure availability and inclusion. Other third sector operators, as well as fourth sector operators could be considered.

The operating model of digital support by Ministry of Finance sees the third sector as a strong operator and provider of low-threshold support. Ensuring provincial operations is essential and can be done by increasing efforts in recruiting peers and volunteers and increasing home-delivered assistance also as outsourced purchase. Co-operation with other providers and operators to share and save resources should be considered as they could also increase effectiveness and visibility.



## CO-ORDINATION

Projects are goal-oriented operations with a beginning and an end. Depending on the length and the scope of the project, it may or may not be able to root the conclusions into procedures, practices or even guidelines. Funding is a major part that defines the success of the implementation and the level of commitment and stability of the participants is another significant factor.

Fact 6. At the moment, the mass of projects, programs and initiatives active simultaneously result in fragmentation, un-effective use of resources and uncertainty about the responsibilities and roles of different operators. Alongside the official operators the fourth sector i.e. citizen activism outside third sector is responding to shortcomings in society.

Fact 7. Co-ordinated services are effective, offer expertise and quality and are documented to be repeated and replicated later.

Suggestion: there needs to be concrete and visible co-ordination of regional support, the support and training for the organizers and providers of digital support in public, private and third sectors as well as influencers in fourth sector.

## 8 CONCLUSIONS AND RECOMMENDATIONS

The study shows and confirms what have been previously established in research: a digital divide exists and megatrends like digitalization, urbanization and polarization increase the exclusion and digital inequality in the society. Visual impairment as disability can leave a person with limited choices in life and can significantly decrease inclusion and independency. Advocacy and promotion of rights is done in several fronts, but legislation and regulation develop more slowly than fast progressing technology and businesses aspiration for effectiveness.

Digitalization is moving services to electronic environment and regulation is directing it as the primary channel of transactions. The starting point and the leading thought in developing these new services should be that it considers the end-users with most barriers and if it works for that group, it will work for the rest of the users. That way, there is less need for special solutions that are costly and hinders inclusion. Incentives and approaches have been created to guide into more accessible design, but without legislative regulation the "guidelines" are left open to interpretation and insufficient considerations on accessibility.

Independency, integrity and safety are human rights and referred to in legislation regarding e.g. non-discrimination, rights of the disabled and equality. Disabilities are largely still considered as individual's restrictions rather than society's adaptation to variation in personal features and the fact is

that the people that do not need to think about barriers do not. Ironically, the view of a sighted person is narrowed by its limitlessness.

Subjective rights ensure at least some of the necessary services for the disabled, but the scope of personal skills and interest and the network of people around define the level of inclusion in society. For a visually impaired, contributing factors are the age of disablement and level/form of disability and the adaptation to the new situation. Digital support and skills are currently not considered in the service plans or customer plans made e.g. in the social services. They are however considered to be today's civic skills that guarantee the possibility to influence and function in society and therefore should be ensured for every citizen equally.

Public service providers have an obligation to guide to finding and use their services, but the level of support varies greatly. Libraries, community colleges, associations and others provide volunteer or peer-support or training for different levels of digital skills, but the primary source of expert digital support for visually impaired are the Associations for visually impaired. The support needed is quite specified and need assistive technologies that can be costly and need special knowledge. Moreover, visually impaired are relatively small group so it is rational to focus the support to special service providers.

It needs to be remembered that visually impaired are a heterogeneous group whose digital service environment looks very different. Some are lead users that embrace the technological novelties before they become mainstream. They have resources and financial stability and can contribute to development of new services by providing insights from the user perspective. Others use outdated technology and even that merely out of necessity. There is no real desire or motivation to learn more or familiarize with technology that is (in their minds) so far gone. There might be socio-economic barriers and attitudes that hinder the change.

The current practice of providing digital support in The Association is working relatively well even though maintaining funding and resources have become increasingly challenging. To reach those people that for some reason do not use or want to learn to use digital services needs to be solved by finding ways to motivate people and give them power to influence matters concerning their everyday life. The challenges for the near future are keeping the branches in the provinces alive with more volunteers and peers, expanding the customer- and member base and co-operation with different operators to develop the accessibility and creation e.g. the testing environments of services.

In my opinion, there is currently not enough research about the cost-effectiveness of accessible design of digital services and this could be studied. Because the funding (and the sufficiency of it) remains constant issue, the possible alternative funding mechanisms and structures should be mapped. A larger material of the attitudes and knowledge of healthcare professionals towards visually impaired could be collected and studied. Business model could be created to develop and promote accessibility expertise of visually impaired.

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## APPENDIX 1: SAATEKIRJE/ COVERING LETTER

Hei. Olen Heidi Aarra ja selvitän maisteriopintojeni opinnäytetyössä digituen ja digitaalisten terveyspalveluiden tunnettuutta, tarvetta ja käyttöä näkövammaisen kokemana. Työni tarkoitus on löytää ja koota hyviä käytäntöjä. Tutkimus on tarkoitettu suorittaa puhelinhaastattelulla tai webropol- kyselyllä vastaajan mieltymyksen mukaan. Haastattelu kestää n. 40 minuuttia, kyselyyn vastaaminen vie noin 15 minuuttia.

Jos haluat osallistua puhelinhaastatteluun, alle kirjoitetaan nimesi ja puhelinnumerosi. Lisäksi valitaan sopiva/sopivat haastatteluajankohdat. Jos vastaat mieluummin webropol- kyselyyn, kirjoitetaan sähköpostiosoite.

Kaikkien vastanneiden kesken arvotaan 15 euron S-ryhmän lahjakortti. Jos haluat osallistua arvontaan, kysytään lisäksi postiosoitteesi.

Tietoja käytetään vain tutkimukseen osallistuvien tavoittamiseksi ja palkinnon toimittamiseen. Vastaukset käsitellään niin, ettei yksittäistä vastaajaa voi tunnistaa.

Tutkijan yhteystiedot:

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Savonia Ammattikorkeakoulu, Kuopio

Osallistujan yhteystiedot:

Nimi:

Puhelinnumero:

Sähköpostiosoite:

Osoite arvontaa varten:

Minulle voi soittaa mieluiten:

arkisin klo 9–17 välillä

arki-iltaisoin klo 17–19 välillä

viikonloppuisin klo 9–18 välillä

sopivat viikonpäivät:

Mikä tahansa aika ja päivä käy

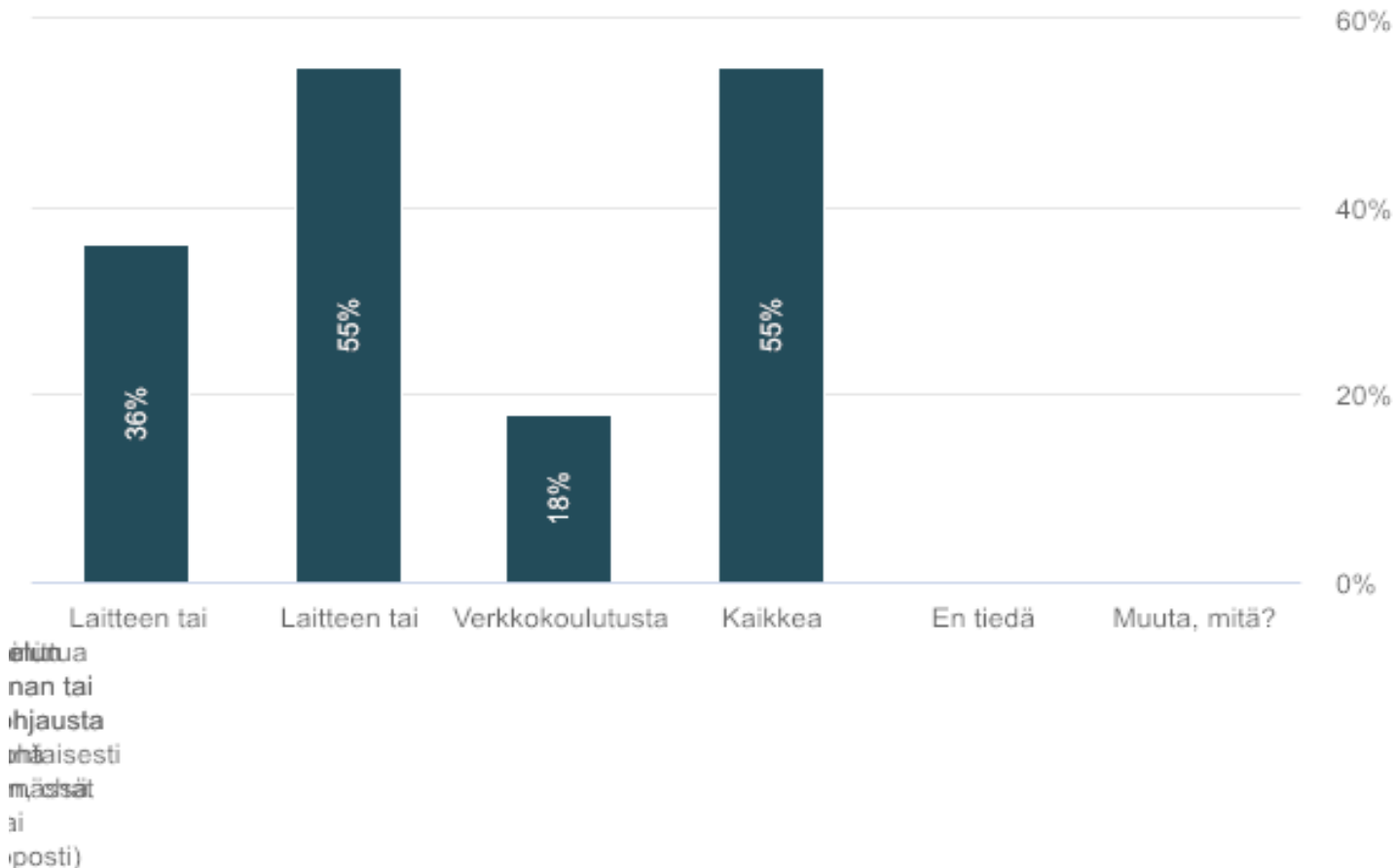
## APPENDIX 2: SURVEY REPORT

## Digital support Digituki ja digitaaliset terveystalvelut

Vastaajien kokonaismäärä: 11

### 1. Mitä digituki mielestänne tarkoittaa? Voit valita useamman vaihtoehdon.

Vastaajien määrä: 11, valittujen vastausten lukumäärä: 18

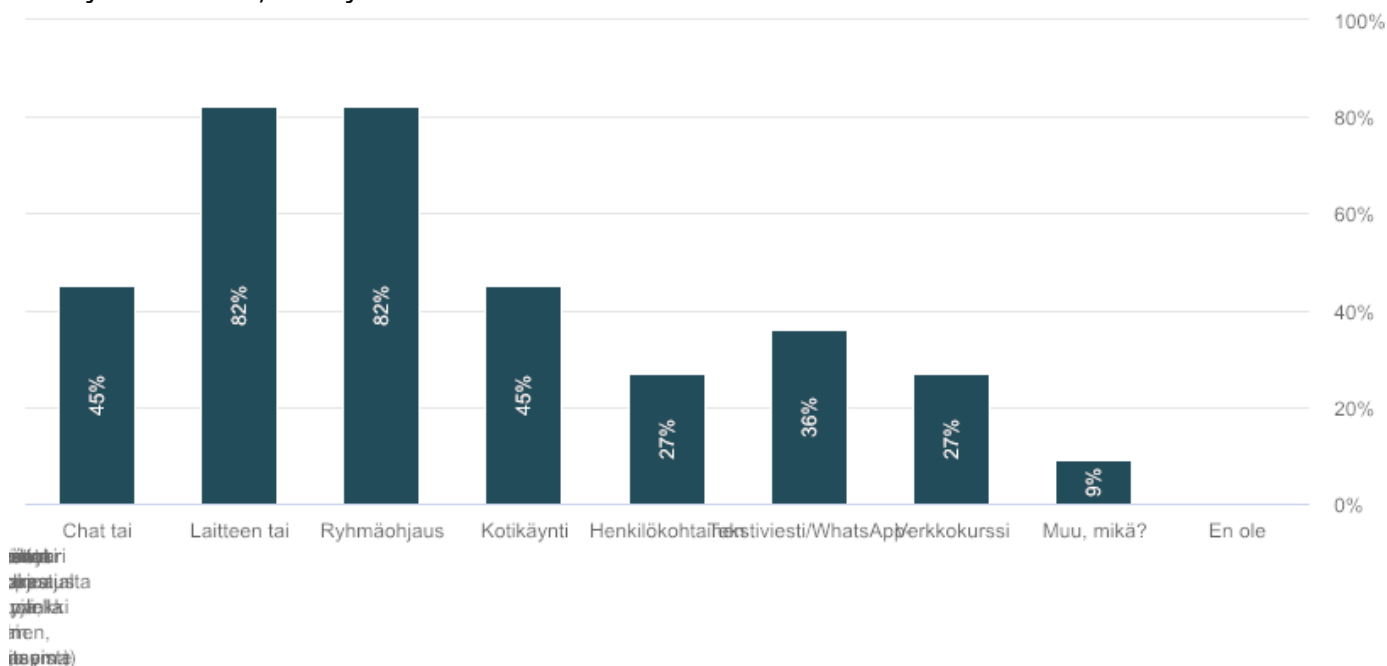


|                                                                                         | n | Prosentti |
|-----------------------------------------------------------------------------------------|---|-----------|
| Laitteen tai palvelun hankinnan tai käytönohjausta etänä (puhelin, chat tai sähköposti) | 4 | 36,36%    |
| Laitteen tai palvelun hankinnan tai käytönohjausta henkilökohtaisesti tai ryhmässä      | 6 | 54,55%    |
| Verkkokoulutusta                                                                        | 2 | 18,18%    |
| Kaikkea yllämainittua                                                                   | 6 | 54,55%    |
| En tiedä                                                                                | 0 | 0%        |
| Muuta, mitä?                                                                            | 0 | 0%        |

| Keskiarvo |
|-----------|
| 2,56      |

## 2. Minkälaista digitukea käytät tai olet joskus käyttänyt? Valitse kaikki sopivat vaihtoehdot. Jos valitset vaihtoehdon: en ole käyttänyt digitukea, vastaat seuraavaksi kysymyksen 5.

Vastaajien määrä: 11, valittujen vastausten lukumäärä: 39



|                                                                          | n | Prosentti |
|--------------------------------------------------------------------------|---|-----------|
| Chat tai puhelintuki palveluntarjoajalta (esim. pankki tai terveysasema) | 5 | 45,45%    |
| Laitteen tai palvelun käytönopastus (myyjä, läheinen, avustaja ym.)      | 9 | 81,82%    |
| Ryhmäohjaus                                                              | 9 | 81,82%    |
| Kotikäynti                                                               | 5 | 45,45%    |
| Henkilökohtainen neuvonta kodin ulkopuolella esim. neuvontapiste         | 3 | 27,27%    |
| Tekstiviesti/WhatsApp-viesti                                             | 4 | 36,36%    |
| Verkkokurssi tai webinaari                                               | 3 | 27,27%    |
| Muu, mikä?                                                               | 1 | 9,09%     |
| En ole käyttänyt digitukea                                               | 0 | 0%        |

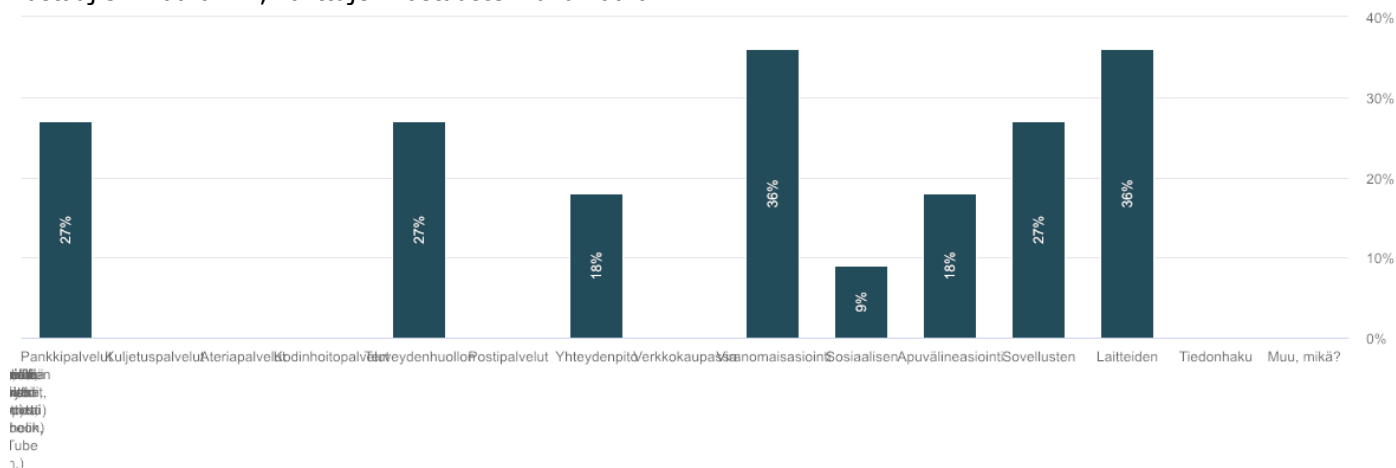
| Keskiarvo |
|-----------|
| 3,54      |

Avoimeen tekstikenttään annetut vastaukset

| Vastausvaihtoehdot | Teksti                   |
|--------------------|--------------------------|
| Muu, mikä?         | Tuttu nörtti on auttanut |

### 3. Minkäläisten asioiden kanssa tarvitset digitukea eniten? Valitse enintään kolme vaihtoehtoa.

Vastaajien määrä: 11, valittujen vastausten lukumäärä: 22



|                                                             | n | Prosentti |
|-------------------------------------------------------------|---|-----------|
| Pankkipalvelut                                              | 3 | 27,27%    |
| Kuljetuspalvelut                                            | 0 | 0%        |
| Ateriapalvelut                                              | 0 | 0%        |
| Kodinhoitopalvelut                                          | 0 | 0%        |
| Terveystieteidenhuollon asiointi                            | 3 | 27,27%    |
| Postipalvelut                                               | 0 | 0%        |
| Yhteydenpito (puhelin, tekstiviestit, sähköposti)           | 2 | 18,18%    |
| Verkkokaupassa asiointi                                     | 0 | 0%        |
| Viranomaisasiointi (Kela, TE-toimisto ym.)                  | 4 | 36,36%    |
| Sosiaalisen median käyttö (internet, Facebook, YouTube ym.) | 1 | 9,09%     |
| Apuvälineasiointi                                           | 2 | 18,18%    |
| Sovellusten asentaminen ja käyttö                           | 3 | 27,27%    |
| Laitteiden hankinta (tietokone, tabletti tai älypuhelin)    | 4 | 36,36%    |
| Tiedonhaku internetistä                                     | 0 | 0%        |
| Muu, mikä?                                                  | 0 | 0%        |

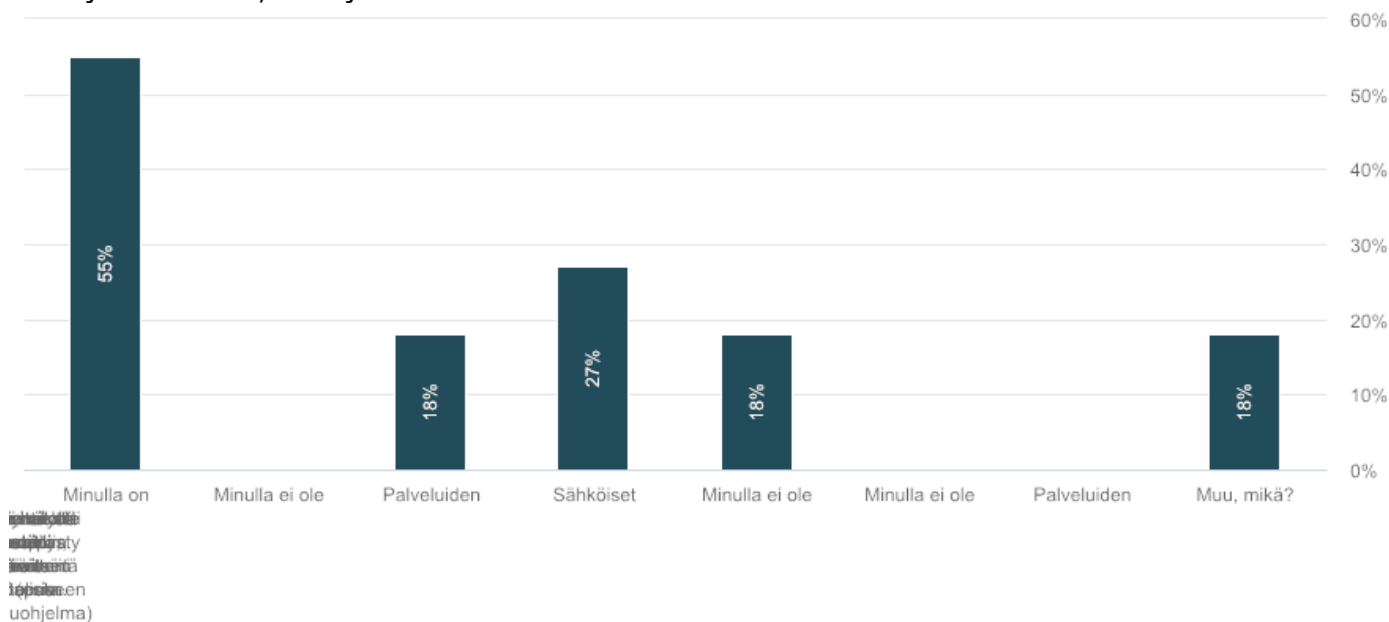
#### Keskiarvo

8,55



#### 4. Mitkä ovat tärkeimpiä syitä digituen tarpeelle? Valitse enintään kolme vaihtoehtoa.

Vastaajien määrä: 11, valittujen vastausten lukumäärä: 15



|                                                                                             | n | Prosentti |
|---------------------------------------------------------------------------------------------|---|-----------|
| Minulla on tietokone, tabletti tai älypuhelin, mutta tarvitsen käyttöapua                   | 6 | 54,55%    |
| Minulla ei ole käytössä tietokonetta, tablettia tai älypuhelinia                            | 0 | 0%        |
| Palveluiden löytäminen on mielestäni vaikeaa                                                | 2 | 18,18%    |
| Sähköiset palvelut eivät ole yhteensopivia apuvälineitteni kanssa (esim. ruudunlukuohjelma) | 3 | 27,27%    |
| Minulla ei ole pankkitunnuksia tai en osaa/pysty käyttämään niitä tunnistautumiseen         | 2 | 18,18%    |
| Minulla ei ole internet-yhteyttä                                                            | 0 | 0%        |
| Palveluiden tietoturva ei ole mielestäni riittävä                                           | 0 | 0%        |
| Muu, mikä?                                                                                  | 2 | 18,18%    |

| Keskiarvo |
|-----------|
| 3,33      |

Avoimeen tekstikenttään annetut vastaukset

| Vastausvaihtoehdot | Teksti                                        |
|--------------------|-----------------------------------------------|
| Muu, mikä?         | Laitteiden uusien ominaisuuksien löytäminen   |
| Muu, mikä?         | Jonkin tietyn asian löytäminen aikaa säästäen |

**5. Jos et ole käyttänyt digitukea, mitä syitä tähän on? Voit valita useamman vaihtoehdon. Jos olet käyttänyt joskus tukea, voit ohittaa tämän kysymyksen.**

Vastaajien määrä: 0, valittujen vastausten lukumäärä: 0

0%

Osaan ja En osaa tai Minulla ei En käytä En tiedä, Minulla ei Muu syy,

digitukea  
 digitukea  
 digitukea  
 digitukea  
 digitukea  
 digitukea  
 digitukea

|                                                                                | n | Prosentti |
|--------------------------------------------------------------------------------|---|-----------|
| Osaan ja pystyn käyttämään tarvitsemiä palveluita ja tuotteita ilman digitukea | 0 | 0%        |
| En osaa tai pysty käyttämään laitteita, joihin voisin tarvita digitukea        | 0 | 0%        |
| Minulla ei ole käytössä tietokonetta, tablettia tai älypuhelinta               | 0 | 0%        |
| En käytä palveluita, joihin tarvitsisin digitukea                              | 0 | 0%        |
| En tiedä, mistä voisin saada digitukea                                         | 0 | 0%        |
| Minulla ei ole internet-yhteyttä                                               | 0 | 0%        |
| Muu syy, mikä?                                                                 | 0 | 0%        |

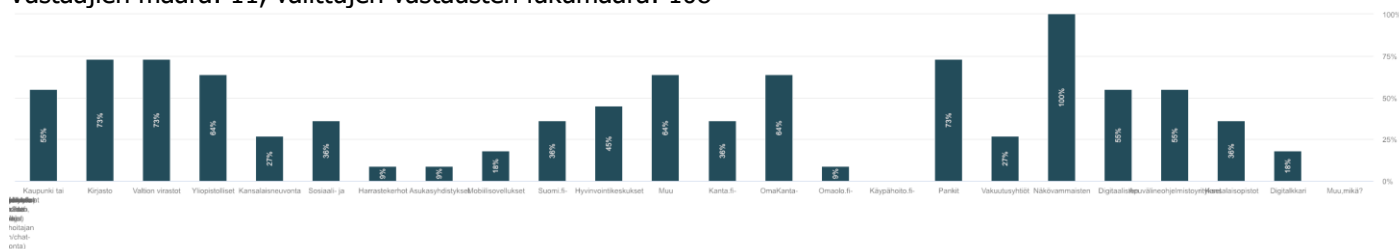
|                  |
|------------------|
| <b>Keskiarvo</b> |
| 0                |

Avoimeen tekstikenttään annetut vastaukset

|                           |               |
|---------------------------|---------------|
| <b>Vastausvaihtoehdot</b> | <b>Teksti</b> |
|---------------------------|---------------|

## 6. Mitä digituen tarjoajia tai tukimuotoja tiedät? Valitse kaikki vaihtoehdot, joiden tiedät tai joiden odottaisit tarjoavan tukea.

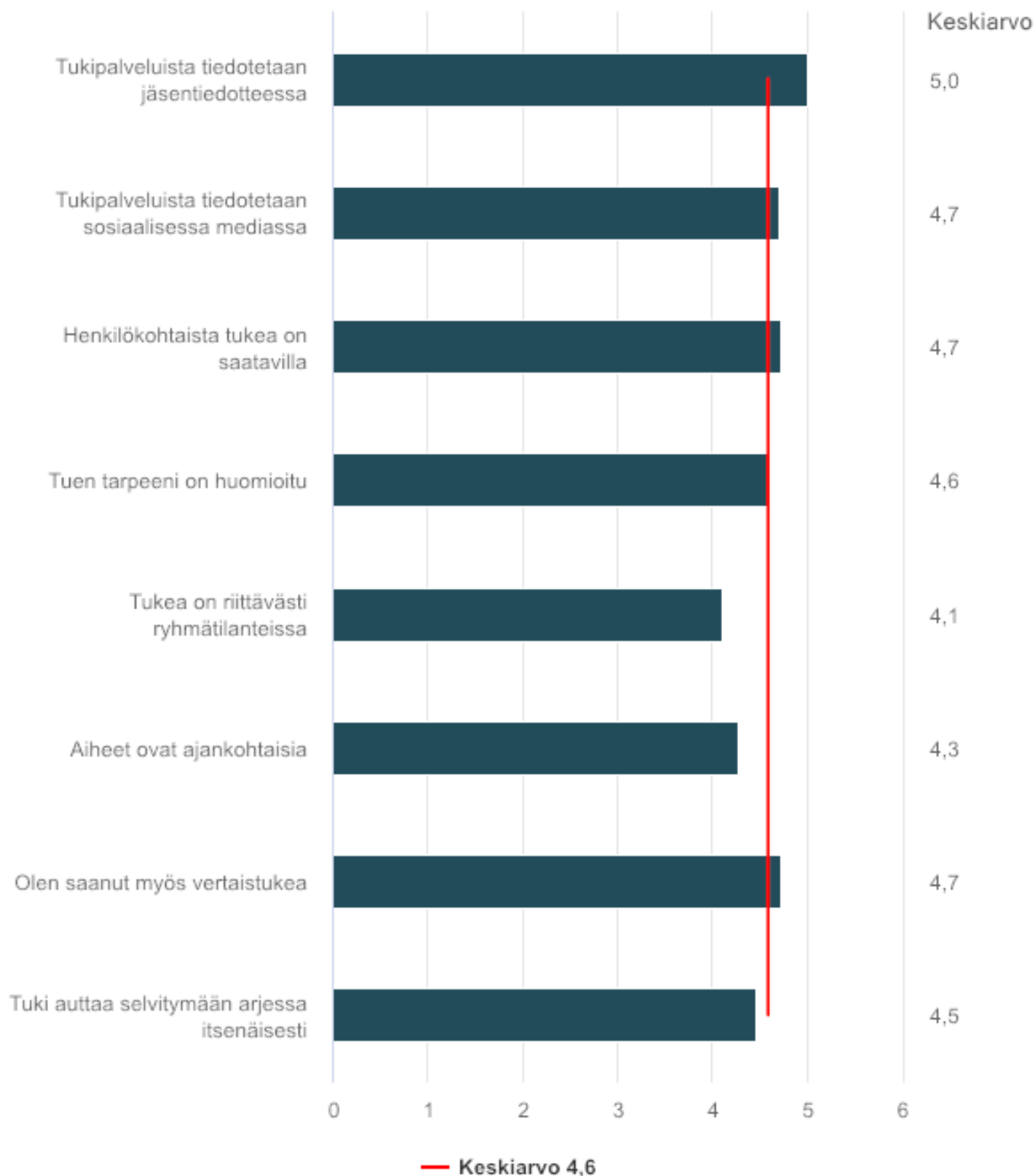
Vastaajien määrä: 11, valittujen vastausten lukumäärä: 108



|                                                                             | n  | Prosentti |
|-----------------------------------------------------------------------------|----|-----------|
| Kaupunki tai kunta                                                          | 6  | 54,55%    |
| Kirjasto                                                                    | 8  | 72,73%    |
| Valtion virastot (esim. Verohallinto, Kela)                                 | 8  | 72,73%    |
| Yliopistolliset sairaalat                                                   | 7  | 63,64%    |
| Kansalaisneuvonta (puhelinpalvelu)                                          | 3  | 27,27%    |
| Sosiaali- ja terveysyhdistykset                                             | 4  | 36,36%    |
| Harrastekerhot                                                              | 1  | 9,09%     |
| Asukasyhdistykset                                                           | 1  | 9,09%     |
| Mobiilisovellukset (esim. SeniorSurf- sovellus)                             | 2  | 18,18%    |
| Suomi.fi- verkkosivusto                                                     | 4  | 36,36%    |
| Hyvinvointikeskukset                                                        | 5  | 45,45%    |
| Muu terveydenhuollon neuvonta (esim. sairaanhoitajan puhelin/chat-neuvonta) | 7  | 63,64%    |
| Kanta.fi- verkkosivusto                                                     | 4  | 36,36%    |
| OmaKanta- verkkopalvelu                                                     | 7  | 63,64%    |
| Omaolo.fi- verkkopalvelu                                                    | 1  | 9,09%     |
| Käypähoito.fi- verkkosivusto                                                | 0  | 0%        |
| Pankit                                                                      | 8  | 72,73%    |
| Vakuutusyhtiöt                                                              | 3  | 27,27%    |
| Näkövammaisten alueyhdistykset                                              | 11 | 100%      |
| Digitaalisten laitteiden tai palveluiden tarjoajat                          | 6  | 54,55%    |
| Apuvälineohjelmistoyritykset                                                | 6  | 54,55%    |
| Kansalaisopistot                                                            | 4  | 36,36%    |
| Digitalkkari                                                                | 2  | 18,18%    |
| Muu, mikä?                                                                  | 0  | 0%        |

**7. Jos olet käyttänyt Pohjois-Pohjanmaan Näkövammaiset ry:n tarjoamia digipalveluita (ICT-palvelut), miten arvioisit seuraavien osa-alueiden onnistumista? Arvioi asteikolla 1 - 5, jossa 1=heikko ja 5=erinomainen. Vaihtoehto 6 on= en osaa sanoa.**

Vastaajien määrä: 11



|                                                    | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> | <b>6</b> | <b>Medi-<br/>aani</b> |
|----------------------------------------------------|----------|----------|----------|----------|----------|----------|-----------------------|
| Tukipalveluista tiedotetaan jäsentiedotteessa      | 0%       | 0%       | 0%       | 18,18%   | 63,64%   | 18,18%   | 5                     |
| Tukipalveluista tiedotetaan sosiaalisessa mediassa | 0%       | 0%       | 20%      | 20%      | 30%      | 30%      | 5                     |
| Henkilökohtaista tukea on saatavilla               | 0%       | 0%       | 9,09%    | 18,18%   | 63,64%   | 9,09%    | 5                     |
| Tuen tarpeeni on huomioitu                         | 0%       | 0%       | 10%      | 30%      | 50%      | 10%      | 5                     |
| Tukea on riittävästi ryhmätilanteissa              | 0%       | 10%      | 20%      | 30%      | 30%      | 10%      | 4                     |
| Aiheet ovat ajankohtaisia                          | 0%       | 0%       | 0%       | 72,73%   | 27,27%   | 0%       | 4                     |
| Olen saanut myös vertaistukea                      | 0%       | 0%       | 0%       | 45,46%   | 36,36%   | 18,18%   | 5                     |
| Tuki auttaa selvitymään arjessa itsenäisesti       | 0%       | 0%       | 18,18%   | 27,27%   | 45,46%   | 9,09%    | 5                     |

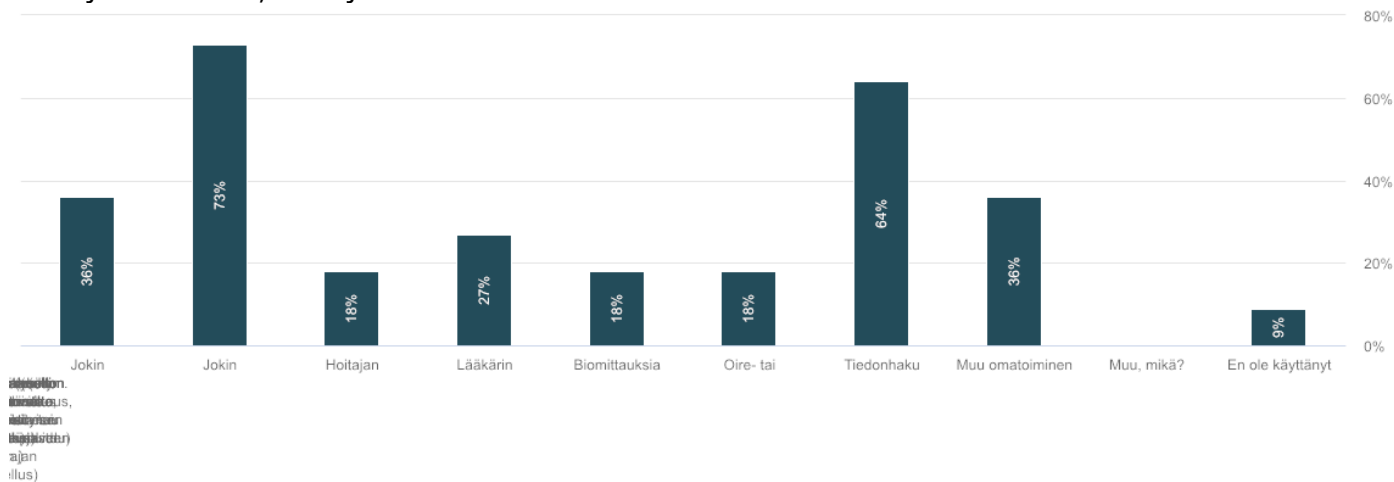
**8. Arvioi seuraavaksi Pohjois-Pohjanmaan Näkövammaiset ry:n tuen eri osa-alueitten tärkeyttä asteikolla 1-5, jossa 1=täysin yhdentekevä ja 5=erittäin tärkeä. Vastaajien lukumäärä:11**



|                                                               | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> | <b>Medi-<br/>aani</b> |
|---------------------------------------------------------------|----------|----------|----------|----------|----------|-----------------------|
| Tukipalveluista tiedotetaan jäsentiedotteessa                 | 0%       | 0%       | 0%       | 18,18%   | 81,82%   | 5                     |
| Tukipalveluista tiedotetaan sosiaalisen median kana-<br>vissa | 0%       | 10%      | 30%      | 20%      | 40%      | 4                     |
| Tukipalvelut ovat tarpeellisia minulle                        | 0%       | 0%       | 9,09%    | 18,18%   | 72,73%   | 5                     |
| Tukipalvelut ovat tarpeellisia jäsenistölle                   | 0%       | 0%       | 0%       | 20%      | 80%      | 5                     |
| Saan tarvittaessa henkilökohtaista tukea puhelimitse          | 0%       | 0%       | 0%       | 27,27%   | 72,73%   | 5                     |
| Saan tarvittaessa henkilökohtaista tukea kotona               | 0%       | 0%       | 18,18%   | 27,27%   | 54,55%   | 5                     |
| Saan tarvittaessa ryhmätukea yhdistyksen tiloissa             | 0%       | 9,09%    | 9,09%    | 36,36%   | 45,46%   | 4                     |
| Saan tarvittaessa vertaistukea                                | 0%       | 0%       | 9,09%    | 63,64%   | 27,27%   | 4                     |
| Tuki auttaa minua selviytymään arjessa itsenäisesti           | 0%       | 9,09%    | 0%       | 63,64%   | 27,27%   | 4                     |

## 9. Mitä seuraavista digitaalisista terveyspalveluista tai tuotteista olet käyttänyt?

Vastaajien määrä: 11, valittujen vastausten lukumäärä: 33



|                                                                                                 | n | Prosentti |
|-------------------------------------------------------------------------------------------------|---|-----------|
| Jokin terveydenhuollon mobiilisovellus (esim. yksityisen terveyspalveluiden tuottajan sovellus) | 4 | 36,36%    |
| Jokin terveydenhuollon verkkosivusto (esim. ajanvarauspalvelu)                                  | 8 | 72,73%    |
| Hoitajan etävastaanotto                                                                         | 2 | 18,18%    |
| Lääkärin etävastaanotto                                                                         | 3 | 27,27%    |
| Biomittauksia tekevä laite (esim. kello, ranneke, sormus tai muu laite)                         | 2 | 18,18%    |
| Oire- tai terveystarkastus verkossa                                                             | 2 | 18,18%    |
| Tiedonhaku verkossa (esim. Käypähoito-sivusto, Terveyskirjasto ym.)                             | 7 | 63,64%    |
| Muu omatoiminen mittaus (esim. verensokerimittaus, silmänpaineen mittaus)                       | 4 | 36,36%    |
| Muu, mikä?                                                                                      | 0 | 0%        |
| En ole käyttänyt mitään edellä mainituista palveluista tai tuotteista                           | 1 | 9,09%     |

| Keskiarvo |
|-----------|
| 4,58      |

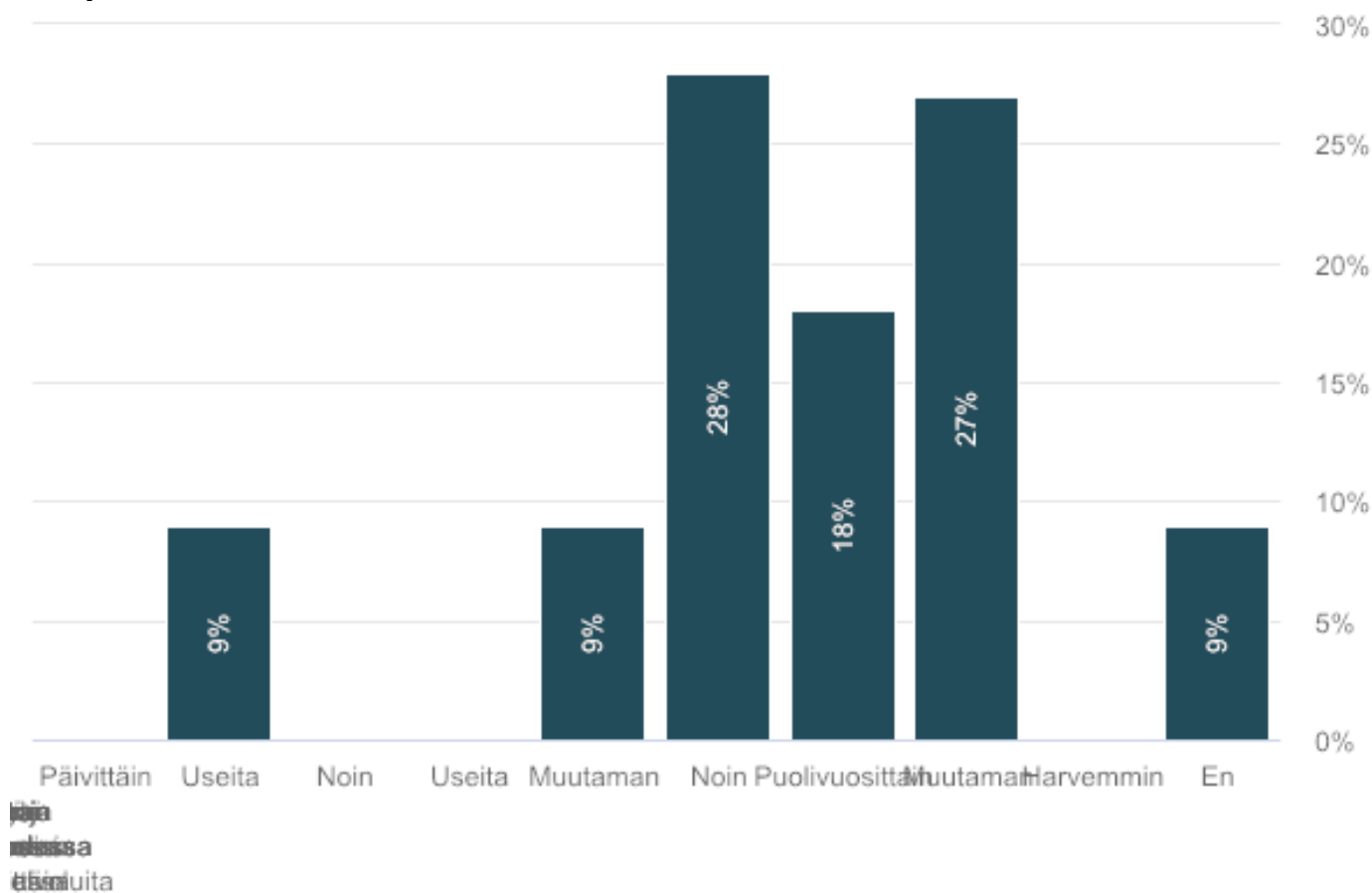
Avoimeen tekstikenttään annetut vastaukset

| Vastausvaihtoehdot | Teksti |
|--------------------|--------|
|--------------------|--------|



## 10. Miten usein käytätte digitaalisia terveystalveluita? Valitse eniten omaa tilannettasi vastaava vaihtoehto.

Vastaajien määrä: 11



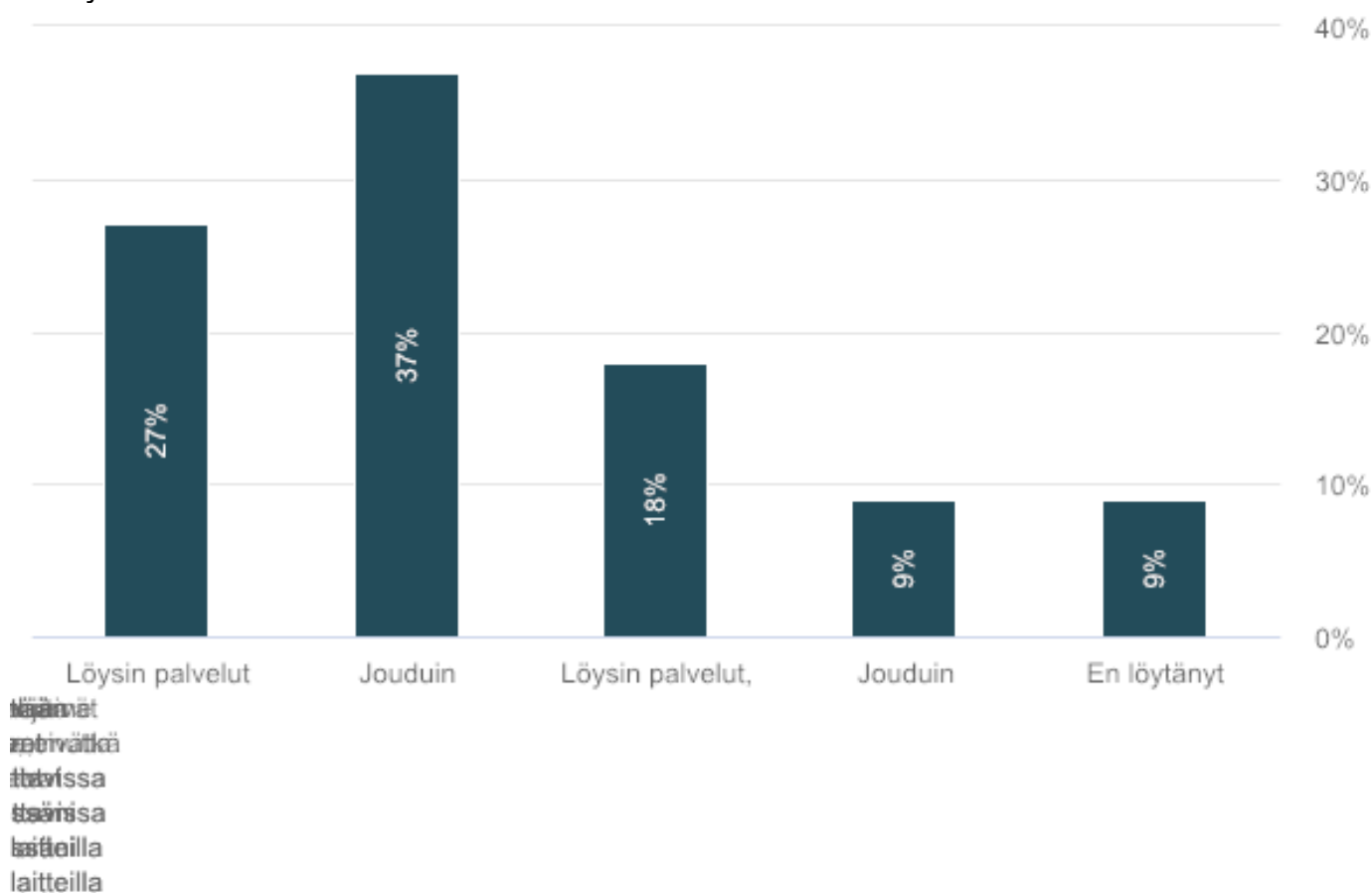
|                                         | n | Prosentti |
|-----------------------------------------|---|-----------|
| Päivittäin tai lähes päivittäin         | 0 | 0%        |
| Useita kertoja viikossa                 | 1 | 9,09%     |
| Noin kerran viikossa                    | 0 | 0%        |
| Useita kertoja kuukaudessa              | 0 | 0%        |
| Muutaman kerran kuukaudessa             | 1 | 9,09%     |
| Noin kerran kuukaudessa                 | 3 | 27,28%    |
| Puolivuositain                          | 2 | 18,18%    |
| Muutaman kerran vuodessa                | 3 | 27,27%    |
| Harvemmin kuin kerran vuodessa          | 0 | 0%        |
| En käytä digitaalisia terveystalveluita | 1 | 9,09%     |

### Keskiarvo

6,64

### 11. Mikä vaihtoehto vastaa parhaiten käyttämienne digitaalisten terveystalveluiden saatavuutta ja saavutettavuutta? Voit valita vain yhden vaihtoehdon.

Vastaajien määrä: 11



|                                                                                             | n | Prosentti |
|---------------------------------------------------------------------------------------------|---|-----------|
| Löysin palvelut helposti ja ne olivat saavutettavissa käytössäni olevilla laitteilla        | 3 | 27,27%    |
| Jouduin etsimään palveluita, mutta ne olivat saavutettavissa käytössäni olevilla laitteilla | 4 | 36,37%    |
| Löysin palvelut, mutta ne eivät olleet saavutettavissa käytössäni olevilla laitteilla       | 2 | 18,18%    |
| Jouduin etsimään palveluita, eivätkä olleet saavutettavissa käytössäni olevilla laitteilla  | 1 | 9,09%     |
| En löytänyt palveluita                                                                      | 1 | 9,09%     |

| Keskiarvo |
|-----------|
| 2,36      |

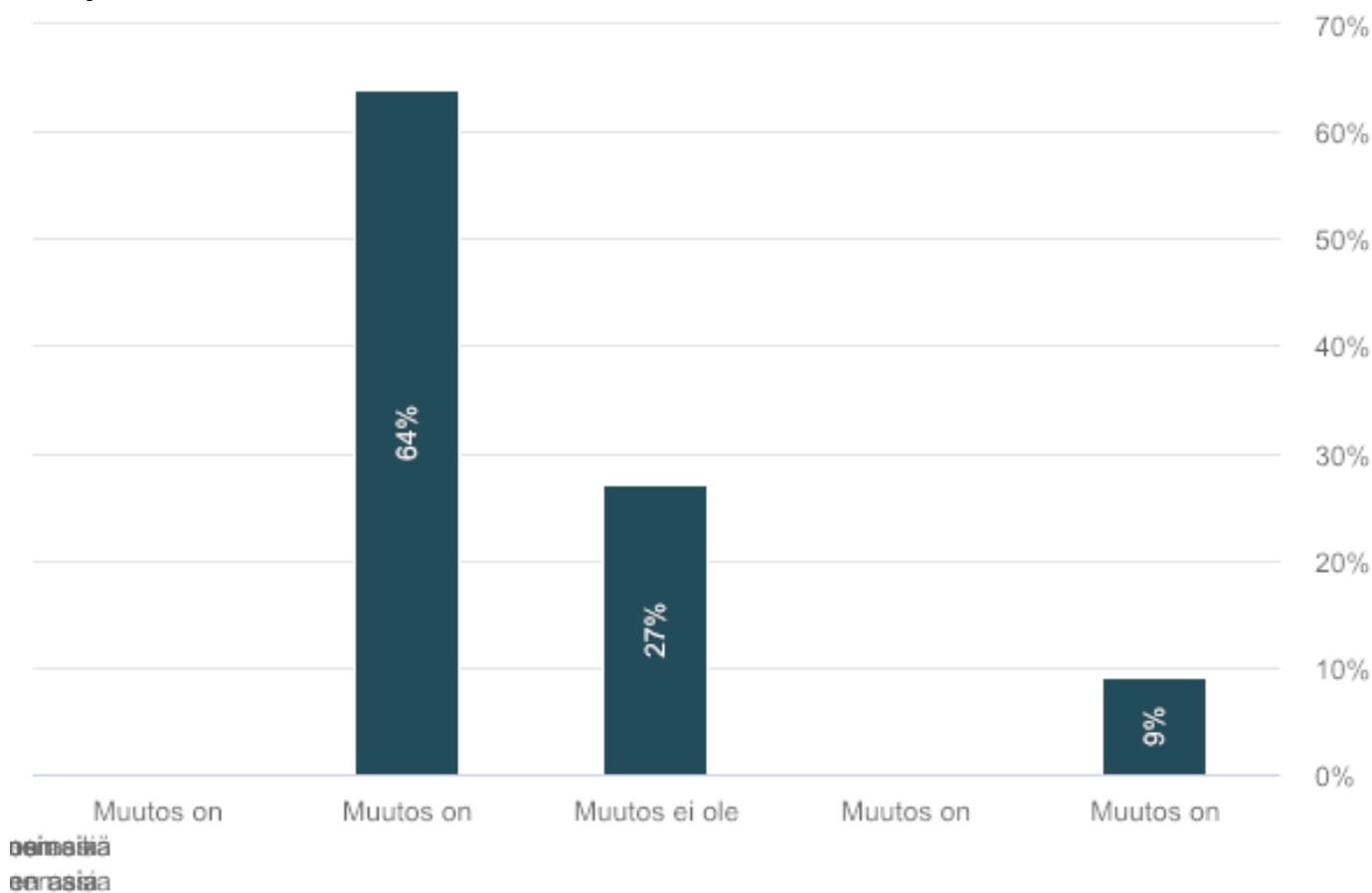
**12. Mitä esteitä sähköisten palveluiden saavutettavuudessa mielestäsi on?**

Vastaajien määrä: 7

| <b>Vastaukset</b>                                                                                                                                                                                                               |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Suurin ongelma minun kohdalla on, että en ole expertti tietokoneen käytössä. Sorminäppäryys ei riitä tekstiviesteihin ja taito ei riitä palveluiden käyttöön.                                                                   |
| Kontrasti on monesti huono heikkonäköiselle, esim. Valkoinen pohja ja vihreä teksti ei toimi. Täytyisi olla myös helppolukuista tekstiä niin useammat ymmärtäisivät lukemansa.                                                  |
| Tunnistautuminen, apua tarvitaan joka vaiheessa varmistamaan                                                                                                                                                                    |
| Näkövammaisen ikäihmisen on vaikea oppia käyttämään tietokonetta ja hallitsemaan esim. käyttäjätunnuksia ym. monimutkaisuuksia päästäkseen turvallisesti asiointisivuille                                                       |
| ruudunlukija ei lue kaikkia tarvittavia rivejä, numeroita ja sarakkeita lainkaan tai niistä ei saa oikeaa tietoa esimerkiksi niiden vaikeaselkeisyyden vuoksi, esimerkiksi jokin arvo ja yksikkö sen perässä tai jokin lyhenne. |
| Se miten verkkosivut on tehty, ulkoasu on niissä usein epäselvä ja sekava                                                                                                                                                       |
| -esim. Kelan lomakkeita ei kaikkia voi täyttää ruudunlukuohjelman kanssa (ruudunlukija ei puhu lomakkeita).<br>-asiaa ja vaihtoehtoja/toimintoja on niin paljon, että on hankala hahmottaa kokonaisuuksia.                      |

### 13. Mitä ajattelet terveystalveluiden muuttumisesta yhä enemmän digitaalisiksi? Voit valita yhden vaihtoehdon.

Vastaajien määrä: 11



|                                               | n | Prosentti |
|-----------------------------------------------|---|-----------|
| Muutos on myönteinen asia                     | 0 | 0%        |
| Muutos on pääosin myönteinen asia             | 7 | 63,64%    |
| Muutos ei ole myönteinen eikä kielteinen asia | 3 | 27,27%    |
| Muutos on pääosin kielteinen asia             | 0 | 0%        |
| Muutos on kielteinen asia                     | 1 | 9,09%     |

| Keskiarvo |
|-----------|
| 2,55      |

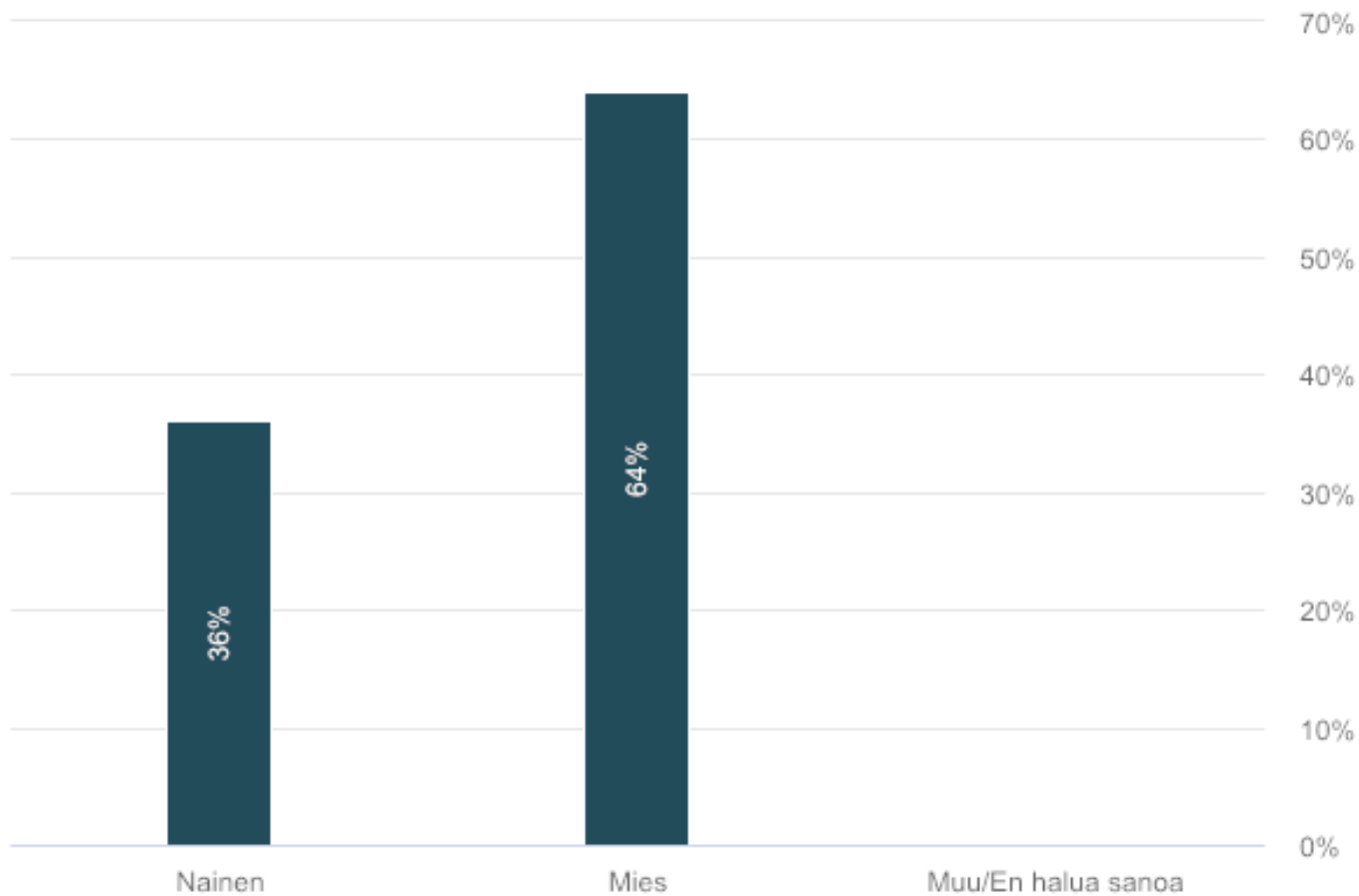
**14. Jos haluat täydentää edellistä vastaustasi, voit tehdä sen tässä:**

Vastaajien määrä: 5

| <b>Vastaukset</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Saavutettavuutta pitäisi vielä parantaa                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Henkilökohtainen opastus täytyisi olla                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Näkövammaisena toivoisin ko. asiointisivuille pääsyä helpommaksi...mutta miten...?                                                                                                                                                                                                                                                                                                                                                                                                  |
| En pysty sanomaan, jos asiat ovat jonkun kohdalla vaikeita. Itse pystyn käyttämään digitaalisia palveluita hyvin, mutta ymmärrän, että monille ne voivat tuottaa vaikeuksia.                                                                                                                                                                                                                                                                                                        |
| -pelkään, että digipalveluiden myötä lähipalvelut eli kasvokkaiset palvelut vähenevät, kuten pankkipalveluissa on käynyt -> on kuitenkin paljon ihmisiä, jotka eivät itsenäisesti pysty digipalveluita käyttämään. Pitäisi olla sellaisia paikkoja, joissa olisi viranomainen, joka toimisi "avustajana" digipalveluiden käytössä, olisi tukeana, asiaa ei mielestäni voida ulkoistaa omaisille, läheisille ja henkilökohtaisille avustajille ja/tai palvelukotien henkilökunnalle. |

**15. Sukupuoli**

Vastaajien määrä: 11



|                    | n | Prosentti |
|--------------------|---|-----------|
| Nainen             | 4 | 36,36%    |
| Mies               | 7 | 63,64%    |
| Muu/En halua sanoa | 0 | 0%        |

| Keskiarvo |
|-----------|
| 1,64      |

## APPENDIX 3: KEHITYSEHDOTUKSET SUOMEKSI

**PARANNETAAN TIEDONKULKUA**

Enemmän ja laajempaa yhteydenpitoa myös uusia kanavia käyttäen tarvitaan sekä Pohjois-Pohjanmaan Liiton ja digituen järjestäjien ja tarjoajien kesken että kansalaisille ja kansalaisilta. Ammattilaisille ja ammattilaisilta tarvitaan tietoa palveluiden järjestämiseksi ja digituen tarjoajien ja vastaanottajien välillä palautetta tuen kehittämiseksi käyttäjälähtöiseksi.

TOSIASIA 1. On näkövammaisia, jotka eivät löydä tai ole tietoisia palveluista, mutta hyötyisivät niistä suuresti.

MITÄ VOITAIISIIN TEHDÄ: palveluiden markkinointi paikallislehdissä ja muissa medioissa (kohdistettuna myös näkeville) lisäämään palveluiden tunnettuutta esim. läheisten tai sukulaisten keskuudessa. Kampanjoita ja tapahtumia vaikkapa teemalla "ota kaveri/naapuri mukaan". Yhteistyön kehittäminen muiden yhdistysten kanssa, jotta voidaan hyötyä esim. yhteisistä resursseista ja tiedottamisen synergiaeduista. Yhteistyön edistäminen kuntien, viranomaisten ja yritysten kanssa digituen kehittämiseksi, esimerkiksi sähköisten palveluiden käyttäjäpaneelit.

TOSIASIA 2. Kaikki ammattihenkilöt eivät ole riittävästi tietoisia näkövammaisille suunnatuista palveluista eivätkä osaa ohjata asiakkaita palveluiden piiriin.

MITÄ VOITAIISIIN TEHDÄ: mahdollisuuksien mukaan tarjotaan koulutusta ja opastusta näkövammaisten palveluista ammattihenkilöille. Tiivistetään yhteistyötä koulujen ja yritysten kanssa palveluiden tunnettuuden lisäämiseksi.

TOSIASIA 3: On paljon näkö-ongelmaisia ihmisiä jotka eivät (vielä) ole näkövammaisia, mutta voisivat hyötyä yhdistyksen palveluista.

MITÄ VOITAIISIIN TEHDÄ: Palveluita voidaan markkinoida ja suunnata laajemmalle kohderyhmälle lisäämällä näkyvyyttä ja yhteistyötä organisaatioiden, yritysten ja muiden yhdistysten kanssa. Hyvänä esimerkkinä yhteistyö Specsaversin kanssa.

Tiedon lisääminen näöstä ja näkö-ongelmista sekä näkövammaisuudesta esim. kouluissa tai yleisötilaisuuksissa edistää tietoisuutta esim. ennakoivista toimenpiteistä ja silmäturvallisuudesta sekä säännöllisistä näön ja silmien tutkimuksista. Tämä myös vähentää pelkoja ja ennakkoluuloja vammaisuutta kohtaan.

## **RIITTÄVÄTKÖ RESURSSIT?**

Yhdistykset toimivat vähillä resursseilla ja tasapainottelevat riittävän rahoituksen, tasapuolisen toimintojen tarjonnan ja motivoitujen vapaaehtoisten löytämisen kanssa. Jotkut osaamisalueet ja tehtävät ovat keskittyneet yhden tai muutaman ihmisen harteille. Yhdistykset saavat STEA-rahoitusta ja lisäksi lahjoituksia ja testamentteja.

TOSIASIA 4: On riskialtista, jos vain yksi ihminen on vastuussa jostakin palvelukonaisuudesta.

MITÄ VOITAIISIIN TEHDÄ: voidaan elvyttää vertaistukitoiminta ja käynnistää saavutettavuusasiantuntija-toiminta. Näin voidaan lisätä avun saavutettavuutta maakunnissa ja muualla tarjoamalla mahdollisuuden delegoida ja organisoida eritasoisia tukimuotoja ja mahdollistaisi myös asiantuntijuuden tuotteistamisen. Toiminta lisäisi sekä tuen antajan että vastaanottajan osallisuutta.

TOSIASIA 5: maakunnissa toivotaan lisää tapaamisia ICT-tuen osalta.

MITÄ VOITAIISIIN TEHDÄ: vapaaehtoisia tulisi etsiä ja löytää aktiivisesti, jotta maakuntien toiminta saadaan jatkumaan tai uudelleen käynnistettyä. Yhteistyöllä muiden yhdistysten tai tahojen kanssa tämä voisi onnistua.



## **TOIMINNAN KOORDINOINTI**

Projektit ovat tavoitteellisia operaatioita, joilla on alku ja loppu. Riippuen pituudesta ja laajuudesta ja rahoituksen jatkuvuudesta, tulokset voidaan siirtää toiminnaksi, käytännöiksi tai ohjeiksi. Rahoituksen jatkuvuus takaa myös osallistujien sitoutumisen.

TOSIASIA 6. Nykyisellään lukemattomat eri tahojen projektit, tutkimukset ja ohjelmat ovat käynnissä yhtäaikaaisesti ja lopputuloksena on sirpaleisuus ja tehottomuus sekä resurssien tuhlaaminen. Toimenkuvat ja vastuut ovat päällekkäisiä tai häilyviä eivätkä tulokset aina edes hyödytä kohderyhmää.

TOSIASIA 7. Koordinoitu toiminta on yleensä tehokasta ja laadukasta ja se on dokumentoitua, jolloin se voidaan toistaa ja siirtää muualle.

MITÄ VOITAIISIIN TEHDÄ: alueellista tuen koordinointia ja tuen tarjoajien koulutusta tulee vaatia ja kehittää kaikilla tasoilla. Erilaisia projekteja tulisi harkita sen mukaan, voidaanko niillä todella saavuttaa jotain uutta tai parempaa.