TALLINN UNIVERSITY OF TECHNOLOGY
School of Information Technologies

Heleriin Tigane 192538YVEM

INFORMATION SYSTEMS AND DIGITAL LITERACY SKILLS: THE ATTITUDES AND SELF-RATED PERCEPTIONS OF ESTONIAN PRIMARY HEALTH CARE PROVIDERS

Master's Thesis

Supervisor: Kadi Lubi
MD, PhD
Co-supervisor: Peeter Ross
MD, PhD

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Infotehnoloogia teaduskond

Heleriin Tigane 192538YVEM

INFOSÜSTEEMID JA DIGITAALNE KIRJAOSKUS: EESTI ESMATASANDI TERVISHOIUTÖÖTAJATE SUHTUMINE INFOSÜSTEEMIDESSE JA ENESEHINNANG SEOSES DIGITAALSE KIRJAOSKUSE PÄDEVUSEGA

Magistritöö

Juhendaja: Kadi Lubi
MD, PhD
Kaasjuhendaja: Peeter Ross
MD, PhD

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Author’s declaration of originality

I hereby certify that I am the sole author of this thesis. All the used materials, references to the literature and the work of others have been referred to. This thesis has not been presented for examination anywhere else.

Author: Heleriin Tigane

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Abstract

This study aims to find out the self-assessment of Estonian primary health care providers' in terms of the frequency of use, self-confidence and attitude of digital devices and information systems. In addition, the aim is to find out whether the self-confidence of Estonian primary health care providers' in digital literacy is related to the frequency of use of digital devices and information systems and whether their level of self-confidence in digital literacy is related to the attitude towards information systems.

Digital literacy skills for health care providers have become increasingly relevant because of health care digitalization. It is unavoidable for a digitally competent health care provider to have strong basic computing skills to access medical information systems, electronic health records, and securely exchange health-related information. In Estonia, there has not been researched about primary health care providers digital literacy skills, so primary health care providers digital literacy skills have not been evaluated to know what digital skills need to be improved.

To fulfil the aims of this study, a quantitative paper-based survey was conducted by using the purposive sampling method. Data was collected from 69 Estonian primary health care providers at the digital skill training event.

Findings from this study show that the majority of the Estonian primary health care professionals who participated in this survey valued their digital skill level to be good and have a positive attitude towards information systems. Participants find information systems to be important for work efficiency and have low or no fear at all regarding the use of information systems. However, the participants emphasized the importance of digital skill training based on their own individual needs to maintain a good digital skill level.

This thesis is written in English and is 36 pages long, including 6 chapters, 4 figures and 7 tables.

Annotatsioon

Selle uuringu eesmärk on välja selgitada Eesti esmatasandi tervishoiuteenuse osutajate enda hinnang digitaalsete seadmete ja infosüsteemide kasutussageduse, enesekindluse ja suhtumise osas. Lisaks on eesmärk välja selgitada, kas Eesti esmatasandi tervishoiuteenuse osutajate enesekindlus digitaalse kirjaoskuse osas on seotud digitaalsete seadmete ja infosüsteemide kasutussagedusega ning kas nende enesekindluse tase digitaalse kirjaoskuse osas on seotud suhtumisega infosüsteemidesse.

Digitaalne kirjaoskus tervishoiuteenuse osutajate seas on muutunud üha olulisemaks tervishoiuteenuste digitaliseerimise tõttu. Digitaalselt pädeval tervishoiuteenuse pakkujal on vältimatu omada tugevaid arvutioskuseid, et pääseda ligi meditsiiniteabesüsteemidele, elektroonilistele tervisekaartidele ja tervisealase teabe turvaliseks jagamiseks. Eestis ei ole uuritud esmatasandi tervishoiuteenuse pakkujate digitaalse kirjaoskuse taset, mistõttu esmaste tervishoiuteenuste pakkujate digitaalse kirjaoskuse taset ei ole hinnatud teadmaks, milliseid digitaalseid kirjaoskusi tuleb parandada.

Selle uuringu eesmärkide täitmiseks viidi läbi kvantitatiivne paberankeedi uuring, kasutades eesmärgipärast valimi moodustamise meetodit. Digitaalsete oskuste koolitusüritusel koguti andmeid 69 Eesti esmatasandi tervishoiuteenuse pakkujalt.

Selle uuringu tulemused näitavad, et enamik selles uuringus osalenud Eesti esmatasandi tervishoiutöötajatest hindas oma digitaalse kirjaoskuse taset heaks ja omab positiivset suhtumist infosüsteemidesse. Osalejad leiavad, et infosüsteemid on töö efektiivsuse seisukohast olulised ja neil on vähene või puudub üldse hirm infosüsteemide kasutamise osas. Siiski rõhutasid osalejad digitaalse kirjaoskuse koolituse tähtsust, mis lähtuks nende enda individuaalsetest vajadustest, et säilitada hea digitaalse kirjaoskuse tase.

Lõputöö on kirjutatud inglise keeles ning sisaldab teksti 36 leheküljel, 6 peatükki, 4 joonist, 7 tabelit.

List of abbreviations and terms

EHR	Electronic Health Record
IS	Information System
ICT	Information and Communication Technology
TAM	Technology Acceptance Model
IST	Information Society Technology
UTAUT	Unified Theory of Acceptance and Use of Technology
IT	Information Technology
PEU	Perceived Ease of Use
PU	Perceived Usefulness
IDT	Innovation Diffusion Theory
TRA	Theory of Reasoned Action
TPB	Theory of Planned Behaviour
MPCU	Model of Personal Computing Utilization
COVID-19	Coronavirus disease

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1 Introduction

1.1 Background

Information technology is one of the fastest-growing areas that almost all areas of life face, including medicine. The digitalization of health care has changed very much in recent decades, with online information and mobile applications playing an increasing role in health care [1]. The use of information systems in health services emerged by the extensive use of information technologies and computers in different branches of medical industries [2]. In the health care sector, digital literacy skills are essential for interaction and collaboration [3]. Big amount of health-related information is shared, and health care related communication is done via a digital environment [4]. With digitalization, the ability to search, select, evaluate, and implement online health information, digital health literacy skills have become highly important [3].

The skill to find, analyse and create information on various digital platforms is called digital literacy [5]. Digital literacy skills are progressively known to be critical throughout the digital world. It is now more important than ever to access and use the online world effectively. To be a digitally competent health care professional, it is un-evitable to have very good basic computer skills. Computer skills are needed to use medical information systems, electronic health records and to easily share health-related information [6].

Martin and Grudziecki [7] have highlighted that there are three stages of digital literacy [7]. The first level is digital competence, the second level is digital usage, which leaves digital transformation to the last level [8]. Users might not necessarily follow the order of the path and choose to focus on a certain stage that is more relevant to their need. However, there is a possibility to acquire certain lower-level knowledge to understand information from a higher level [7].

Several factors can influence the actual use of information technology (IT) by health care providers. One of the factors that can strongly influence IT to use is the users' attitude.

Attitude in this context is described as the users feeling about learning and using IT [9]. Previous research has shown that user's attitude towards IT can be associated with the general digital skill level and ease of use of the IT [10]-[15]. It can be assumed that a health care providers' positive attitude towards using IT is associated with more frequent use of IT compared to those people who have a negative attitude towards IT [10], [16], [17].

Continuous education about digital technology use and digital literacy skills for health care providers is necessary to keep the staff up to date with the new digital developments and prepare the health care providers for possible future challenges where the use of digital skills is crucial [11]. Digital skills training potential benefits may include widespread delivery and easy access to learning content, customization of the learning process, deeper processing of information, adaptability, enhanced capacity for collaboration, increased learning motivation and enjoyment, cost-effectiveness, and equity. Some possible benefits of high digital literacy skills are related to the increased communication between the public, patients and health care providers, faster communication, increased access to health information and stronger surveillance over public health [12].

1.2 Statement of Problem

The research problem is that with digitalization, health care providers digital literacy skills have become highly important [3] however, previous studies show that many health care providers have low digital skill levels [13], [14], [15] which is why their attitude towards information systems is negative and this can cause poor documentation and low use of digital solutions at work [16], [17].

1.3 Aim, research questions and objectives

This study aims to find out the self-assessment of Estonian primary health care providers in terms of the frequency of use, self-confidence and attitude of digital devices and information systems. In addition, the aim is to find out whether the self-confidence of Estonian primary health care providers' in digital literacy is related to the frequency of use of digital devices and information systems and whether their level of self-confidence in digital literacy is related to the attitude towards information systems.

Research questions:

1. How frequently Estonian primary health care providers use digital devices and information systems?

2. How confident do Estonian primary health care providers feel when using digital devices and information systems?

3. What is the attitude of Estonian primary health care providers towards information systems?

4. Is there a connection between Estonian primary health care providers' digital devices and information systems frequency of use and their confidence towards digital devices and information systems?

5. Is there a connection between Estonian primary health care providers' confidence towards digital devices and information systems and their attitude towards digital devices and information systems?

2 Literature Review

2.1 Digitalization of health care

Information technology is one of the fastest-growing areas that almost all areas of life face, including medicine. The digitalization of health care has changed very much in recent decades, with online information and mobile applications playing an increasing role in health care [1]. The widespread usage of digital technology and computers in various branches of the medical industry gave rise to the use of information systems in health care [2]. Digital literacy skills are critical for engagement and interaction in the health care industry [3]. A significant volume of health-related data is exchanged, as well as health-care-related communication is done in the digital environment [4]. Digital literacy skills have become more relevant as the ability to browse, select, assess, and implement online health information has become more prevalent [3].

The term "digital literacy" is credited to Paul Gilster. Paul Gilster is known to refer to digital literacy as the ability to use and analyse information that is provided via a computer. In addition to that Paul Gilster states the Internet experience will be determined by how the core competencies are acquired [2]. Digital literacy skills are progressively known to be critical throughout the digital world. It is now more important than ever to access and use the online world effectively [3].

Computer literacy is about the knowledge of how to use the computer and by doing so knowing how to solve issues or achieve goals [18]. To be a digitally competent health care professional, it is un-evitable to have very good basic computer skills. Computer skills are needed to use medical information systems, electronic health records and to easily share health-related information. Some other main computer skills that health care professionals should have are knowledge to use email [19], do Internet research [20] and use social media [6].

Email is an easy solution for immediate communication between health care professionals. Moreover, it is a great option for doctor and patient communication. Email possibility could be deciding factor for many patients when choosing a doctor [21]. If a patient cannot contact a doctor via email to share medical concerns, the patient could look up another doctor who provides this service [19].

It is very useful for medical professionals to have skills to navigate the web, as the Internet has the potential to educate the consumer by providing health-related information, so it is therefore widely used for educational purposes by a doctor. In addition to that more and more conferences and seminars have been hosted in an online environment [22]. Internet usage skills are crucial for doctors to perform healthcare-related tasks online [20], [22].

Social media skills for medical professionals are especially useful for self-promotion. Many patients tend to search for background information about the doctor before deciding to make an appointment or not. The Internet presentation of health care clinics with descriptions of health care providers could be very useful, for example, for improving professional networks, company marketing, and gaining patients' trust [6].

2.2 Digital competence

Digitally literate people can use technologies for living, learning, and working in a digital society [23]. Definition provided by Calvani, Cartelli, Fini & Ranieri [24] is suggesting that digital competence refers to the ability to critically analyse information on the web and have the knowledge to use technology to solve a problem while being aware of reciprocal rights and obligations [24]. Martin and Grudziecki [7] have highlighted that there are three stages of digital literacy (Figure 1).

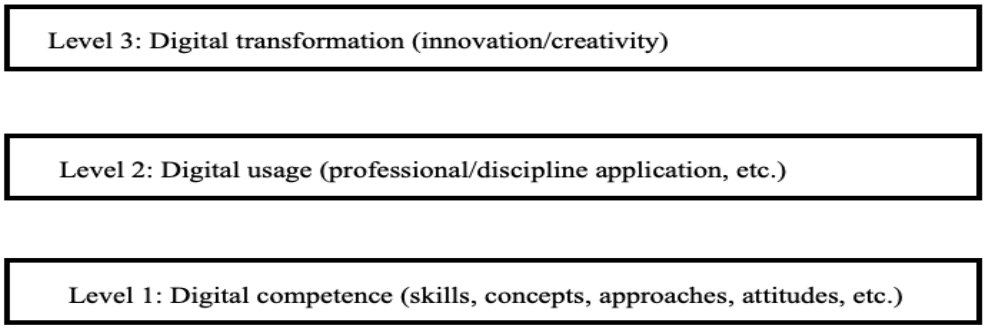


Figure 1: Levels of Digital Literacy (Adapted from Martin & Grudziecki, 2015)

The first level of digital competence is based on having visual recognition and manual skills to have a more critical, evaluative attitude and approach towards used technology and the information it is providing [7], [25]. The second level of digital usage is referring to a context where the person is using digital competence within certain professional or private use. In other words, digital skills are put into practice which involves using digital tools to find and process data to achieve the needed outcome (Figure 1) [7], [25]. The third level of digital transformation is achieved when the digital usages have resulted in innovative and creative changes within the professional or private field [7], [25].

Users might not necessarily follow the order of the path and choose to focus on a certain stage that is more relevant to their need. However, there is a possibility to acquire certain lower-level knowledge to understand information from a higher level [7], [25].

2.3 Attitude and adoption theories

The relevance of theories and frameworks that define IT adoption and use has increased due to growing curiosity in users' response to IT. Various frameworks exist that foresee and describe factors that might influence IT adoption and use [26].

Several factors can influence the actual use of information technology by health care providers. One of the factors that can strongly influence IT to use is the users' attitude. Attitude in this context is described as the users feeling about learning and using IT [9]. Previous research has shown that user's attitude towards IT can be associated with the general digital skill level and ease of use of the IT. It can be assumed that a health care providers' positive attitude towards using IT is associated with more frequent use of IT compared to those people who have a negative attitude towards IT. Furthermore, health care providers' positive mindset regarding new digital solutions can lead to the higher benefit of digital skill learning [10].

Some theories are Innovation diffusion theory (IDT) which defines the users' technology adaptability process, Theory of reasoned action (TRA) that is a model to research conscious intentional behaviour, Theory of planned behaviour (TPB) is used to predict technology acceptance and Model of Personal Computing Utilization (MPCU) which is suitable for predicting user adaptability to various technologies and information systems [27]. The UTAUT and TAM frameworks have been used among several health care

professions like physical and occupational therapists, nurses, and doctors. Both TAM and UTAUT frameworks are strongly valued because of their high accuracy and trustworthiness. In addition to that, both frameworks will foresee users' intention to use IT and users' adoption of IT [28].

Possibly the most popular model to research users' attitude and adoption regarding health IT is Technology Acceptance Model (TAM) [29]. TAM model was created in the 1980s due to the concern that employees were not using provided IT [30]. It is made up of the most important aspects of consumer inspiration which are perceived ease of use (PEU), perceived usefulness (PU) and attitude about technology. From these components, the PEU and PU are thought to be the key factors that define the users' adoption of IT. Factor PU stands for the mindset where the user believes that the used IT will improve work quality. Factor PEU refers to the mindset where the user believes that suggested IT will be user-friendly and easy to use [9].

Another significant model to use in researching interconnection between attitude and IT skills are the Unified Theory of Acceptance and Use of Technology (UTAUT) which consists of basic theories from eight highly valued models including the TAM, IDT, the theory of reasoned action, the motivational model, the theory of planned behaviour, a model combining the TAM and TPB, the model of personal computer utilization and social cognitive theory (SCT) and technology adoption models. The main benefit of the UTAUT model is that it has four predictors to analyse consumers' intention to use technology. These four predictors are performance expectancy, effort expectancy, social influence and facilitating conditions. A performance expectancy means that the user considers the use of technology to be helpful [31]. An effort expectancy stands for the expected ease of use. A social influence refers to the expected attitude of other users toward technology use and facilitating conditions stand for the technical and environmental possibilities for technology use. The UTAUT has been used to foresee health care providers' intention to accept digital solutions [31].

Previous research about health care providers' digital literacy levels and attitudes towards information systems show that appropriate digital literacy skills training is crucial to improve health care providers' attitude towards information systems and desire to use information technologies [32]. In addition, a 2008 study of the factors influencing

healthcare providers' attitude and willingness to use information technology showed that digital literacy skill training is extremely important for encouraging the use of information technology by health care providers [33].

Another study made in 2007 about factors that influence nurses' attitudes towards the use of information systems showed that generally participants had positive attitudes towards information systems and are opened for health information system training by having opinion it is important for providing quality health care [34]. In Australia, a survey assessing health care staff digital literacy levels and attitudes towards information systems, with 407 respondents reported high digital literacy levels and confidence in using technology but still one-fifth reported having anxiety while using information systems [28]. One 2011 study found that nurses working in a community hospital had little or no experience with nearly half of the software and hardware items that were surveyed [14].

Previous systematic literature reviews on health professionals' acceptance of information systems discovered that the TAM and UTAUT models are excellent for demonstrating plans to use information technology as well as evaluating health care providers' digital literacy levels and attitudes toward information systems [28], [33], [35], [36], [37]. In studies where health care professionals have a positive attitude towards information systems, it was brought out by respondents that IS help to finish tasks quicker, share and access health-related information easily and overall increase work efficiency [28], [34].

Other studies where health care providers have felt annoyed with IS have stated that using IS has decreased the quality of care because of IS usage being very time-consuming [38], [39]

3 Methodology

This section describes the details of the selected study data collection methods, participants, measures, and data analysis.

3.1 Data collection and measures

Data were collected during primary health care providers' digital skill training that took place in autumn 2020 and spring 2021. The number of participants in each training differed. The paper-based questionnaires were delivered to the organizer of the digital skill training event, who distributed the questionnaires at the beginning of the digital skill training event. The main reason for doing the paper-based survey instead of the web-based survey is that the paper-based survey does not require digital skills [40]. The study used the purposeful sampling method, specifically criterion sampling strategy [41] where questionnaires were distributed to the desired target group during the digital skill training. The advantage of this method is that it allowed easily target needed participants. For this study purposeful sampling was suitable because it was known what group of participants will take part in the study. Although this method easily allows targeting needed participants, it can be difficult to have enough participants who meet the research criteria [41].

This study is using a quantitative research method to find out Estonian primary health care providers digital literacy levels and attitude towards information systems. The quantitative research approach relies on numerical data and information understudy can be analysed very quickly [42]. However, the quantitative research approach can give limited outcomes and statistical analyses can be quite difficult [42].

For measuring participants' frequency of use and confidence levels in this survey, the four-point Likert-type scale was used. as in similar previous studies where Likert-type scale was most used for identifying users' frequency of use and confidence levels

(Appendix 1). The four-point Likert- type scale was used to identify participants' frequency of use. The Likert-type scale answers about frequency of use ranged from one to four which were ‘never’, ‘private life’, ‘work’, ‘private life and work’. For finding out if COVID-19 has affected digital devices and information systems frequency of use, the Likert-type scale answers ranged from one to four which were ‘using less’, ‘using more’, ‘no change’, ‘do not know’.

Survey questions from the technology acceptance model (TAM) and the unified theory of acceptance and use of technology (UTAUT) were used to assess health care providers attitudes towards information systems (IS) as similar previous studies have used TAM and UTAUT models for assessing health care providers attitudes towards IS. Previous systematic literature reviews on health professionals' acceptance of information systems discovered that the TAM and UTAUT models are excellent for demonstrating plans to use information technology as well as evaluating health care providers' digital literacy levels and attitudes toward information systems [28], [33] [35], [36], [37].

Other instruments were not used because of being validated only in a certain health care area such as nursing. TAM is made up of the most important aspects of consumer inspiration which are perceived ease of use (PEU), perceived usefulness (PU) and attitude about technology. The Estonian primary health care providers answers to the TAM questions are showing their attitude towards IS. TAM questions evaluated the usefulness and ease of use of information systems. The UTAUT has been used to foresee health care providers’ intention to accept digital solutions (Janssen, et al., 2021). The answers to the UTAUT questions show users attitude towards using IS.

The Likert-type measurement scale answers ranged from one to seven which were ‘very unlikely’, ‘quite unlikely’, ‘rather unlikely’, ‘not at all unlikely’, ‘rather likely’, ‘quite likely’ and ‘very likely’. For questions related to user acceptance and use of information technology, the Likert-type answers from one to seven ranged from 1 ‘strongly disagree’ to 7 ‘strongly agree’. Open questions were included in the questionnaire for the qualitative analysis [43].

As COVID-19 has been a global challenge since spring 2020 [44], answers to open questions gave overview how COVID-19 has impacted health care providers’ IS and

digital devices frequency of use at work. At the end of the questionnaire participants could share their thoughts about how to improve IS ease of use.

3.2 Study participants

The study was supposed to target 150 primary health care providers, but due to the COVID-19 pandemic, digital skill training was cancelled in March, April, and May 2021, leaving the study with only 69 participants. All Estonian primary health care providers who took part in digital skill training in autumn 2020 and January, February 2021 have taken part in this research.

3.3 Data analysis

Collected data were analysed using Microsoft Excel because it includes a variety of statistical functions. The table was formed for analysing the frequency of use answers in the four-point Likert scale (Appendix 2). The first column contains variables, the second column contains professions, and the remaining columns contain the percentage of responses from the participants. The last columns showed which option was the most popular among the participants. A five-point Likert scale was used to analyse confidence level answers (Appendix 3). The first column contains variables, the second column contains professions, and the remaining columns contain the percentage of responses from the participants. This indicated which option was chosen the most and which option was selected the least by the participants. The attitude of Estonian primary health care providers toward information systems was examined by gathering the first three statements from the UTAUT questionnaire into a table (Appendix 4). The statements are in the first column, followed by the profession. The mean result of the participants is shown in the following column. A seven-point Likert scale ranging from one to seven was used to calculate the mean of the participants. The sum of the answers was calculated and divided by the number of participants to determine the mean result. All the questions and answers were coded by giving numeric code to each question and answer to calculate the association between answers about the frequency of use and attitude. The statistical mean was estimated for TAM and UTAUT responses to gain an average value and a better understanding of what is considered, predicted or usual for a specific group as a whole [45].

To identify associations between statements, the composite variables were created using survey questions two, three and four and the answers to these questions, which were coded. In total, five composite variables were created. The questionnaire's second question was used to ascertain respondents' self-confidence in using digital devices and IS. The responses of the participants' were entered into an answers table, and a coding table was created to analyse the results later. The participants were given the option of selecting one of five confidence levels, with a total of nine variables. Confidence level options and variables options were multiplied to generate scale table, which revealed the respondents' overall position on the second question. The scale table for question two ranged as follows: 0-9 = not at all, 10-18 = rather not, 19-27 = somewhat, 28-36 = quite, 37-45 = very. A score of 0 indicates that the respondents' confidence is extremely low, while a score of 45 indicates that the respondents' confidence is extremely high.

Following that, the participants' responses to question two were typed into the answers table. The answers of one participant to all variables were added together to determine where the participant fits on the second questions' scale table. This was also done with all the other participants. The previous steps were completed for questions three and four to perform the following four composite variables. Question three was divided into two sections because all of the statements are not in the same category, so statements in each section were categorised. The first six statements were used to create a usefulness composite which is showing the usefulness of IS and the other six statements were used to create an ease-of-use composite which is showing IS ease of use, which were later analysed with the confidence composite to find out if there is an association between those composites. The first three statements from the fourth question were used to create the likeability composite which is showing users' likeability towards IS use and this composite was later compared with the confidence composite to find out if there is an association between these two composites. The sixth, eighth, ninth, and tenth statement from question four was used to create anxiety composite variable which is showing users' self-assessment of how much anxiety they feel when using IS, that was later compared to confidence composite variable. The usefulness, ease-of-use, likeability, and anxiety composites are showing users' attitude towards IS.

The frequency of use associated with confidence was analysed by making a T-test analysis. The T-test was used because it helps in determining whether the null hypothesis

is true or false when identifying associations. According to the null hypothesis theory, the two groups being compared are not statistically associated [46].

T-test method was used as well to identify four associations, which are confidence compared to IS usefulness, confidence compared to ease of use, confidence compared to likeability and confidence compared to participants' anxiety regarding IS use. T-test results are compared to significance level $p \leqslant 0.05$ which is widely used in healthcare-related research [46]. P-value shows if there is an interconnection between two variables. The result below 0.05 shows a significant association between compared variables and which indicates strong evidence against the null hypothesis [47].

4 Results

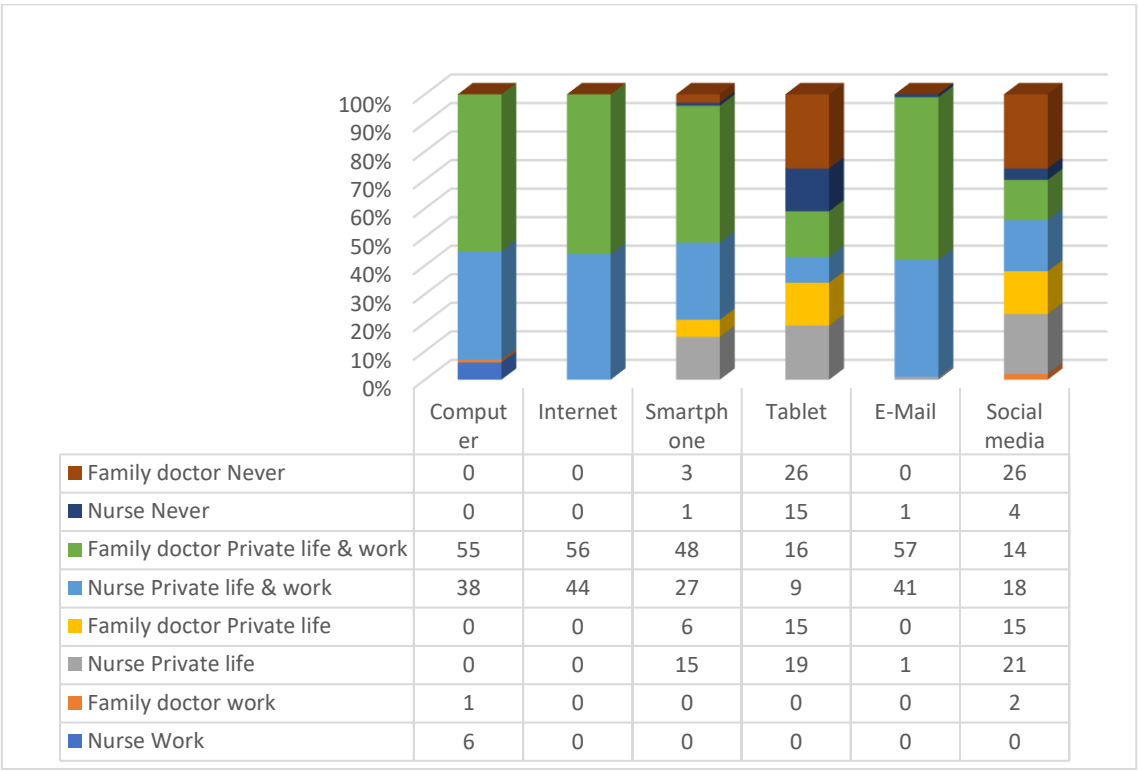
This section describes the details of the selected study data collection methods, participants, measures, and data analysis.

4.1 Demographics

Paper-based questionnaires were received with a response rate of 100% having 69 filled questionnaires. The survey answers were given both by family doctors and nurses (Appendix 6). Of most of the respondents, 93% were women. All participants are speaking Estonian from which 16% reported speaking Russian and 1% another language as well. Results about the length of tenure years showed 3% for 0-1 years, 1% for 2-3 years, 6% for 4-6 years, 3% for 7-10 years and 87 % of participants have a length of tenure more than 11 years (Appendix 2). Job location according to population is 13% where the population is under 5000, 20% where the population is 5001-10 000, 44% where the population is 10 0001- 50 000 and 23% of respondents are working in a location where the population is over 50 000 (Appendix 2).

4.2 Frequency of use and confidence levels

Family doctors and nurses use frequently in private and work life computer, Internet, smartphone, and e-mail. Almost half of the respondents never use a tablet or social media in private life and work. Results are showing that family doctors are using a computer, Internet, smartphone, e-mail, and tablet more frequently in private and work life than nurses. Most of the respondents use social media only in their private life (Figure 2).



	Computer	Internet	Smartphone	Tablet	E-Mail	Social media
Family doctor Never	0	0	3	26	0	26
Nurse Never	0	0	1	15	1	4
Family doctor Private life & work	55	56	48	16	57	14
Nurse Private life & work	38	44	27	9	41	18
Family doctor Private life	0	0	6	15	0	15
Nurse Private life	0	0	15	19	1	21
Family doctor work	1	0	0	0	0	2
Nurse Work	6	0	0	0	0	0

Figure 2: Differences in frequency of use

From all the participants 53% feel that they have started to use digital devices more both in private and working life because of COVID-19, 44% do not feel the change in information systems frequency of use and 3% are not sure about the impact of COVID-19 to information systems frequency of use (Figure 3). Though 65% of participants feel that they have started to use information systems more at work due to COVID-19, 32% of participants feel that the frequency of information systems use at work has not changed and 3% is not sure about the impact of COVID-19 to the frequency of information systems use at work (Figure 3).

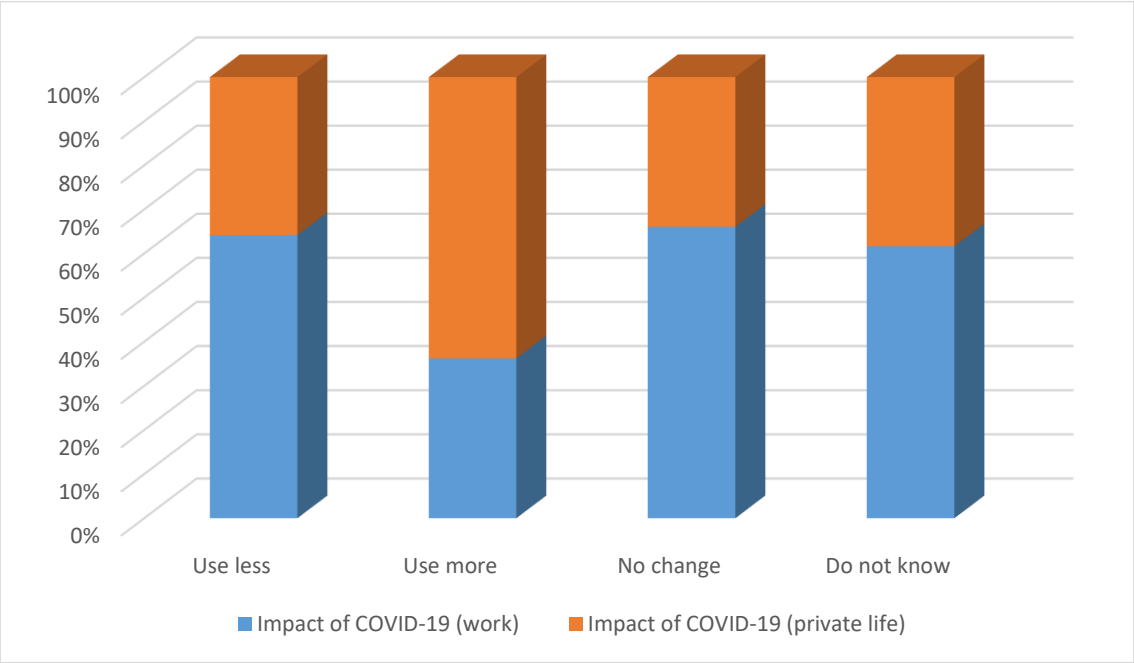
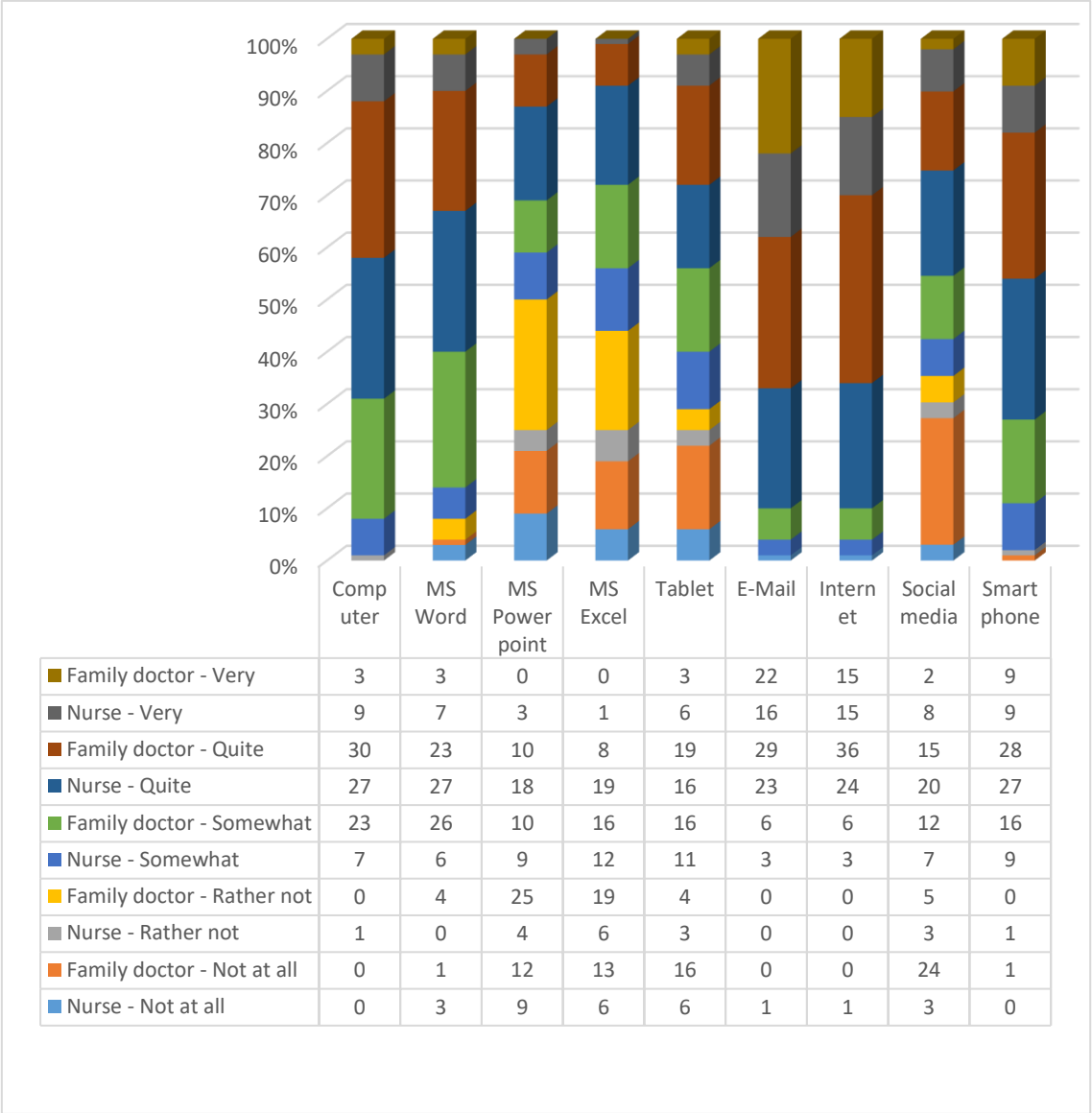


Figure 3: Impact of COVID-19 to digital devices and IS frequency of use

The participants have brought out that especially the use of email and phone to communicate with patients and colleagues has increased due to COVID-19. In addition to email and smartphone participants have brought out the higher use of Skype and Zoom for audio and video conferences.

Over 50 % of family doctors and nurses feel overall quite confident using a computer, MS Word, Internet, smartphone, and e-mail (Figure 4). Family doctors and nurses feel the most confident with using e-mail and the Internet (Figure 4).



	Computer	MS Word	MS Power point	MS Excel	Tablet	E-Mail	Internet	Social media	Smart phone
Family doctor - Very	3	3	0	0	3	22	15	2	9
Nurse - Very	9	7	3	1	6	16	15	8	9
Family doctor - Quite	30	23	10	8	19	29	36	15	28
Nurse - Quite	27	27	18	19	16	23	24	20	27
Family doctor - Somewhat	23	26	10	16	16	6	6	12	16
Nurse - Somewhat	7	6	9	12	11	3	3	7	9
Family doctor - Rather not	0	4	25	19	4	0	0	5	0
Nurse - Rather not	1	0	4	6	3	0	0	3	1
Family doctor - Not at all	0	1	12	13	16	0	0	24	1
Nurse - Not at all	0	3	9	6	6	1	1	3	0

Figure 4: Confidence levels of the survey respondents

Participants have lower levels of confidence using MS PowerPoint, MS Excel, social media, and tablet (Figure 4). Most of the family doctors do not feel confident at all about using social media (Figure 4). The confidence level of the nurses towards using IS and digital devices is overall higher compared to family doctors (Figure 4).

4.3 Attitudes towards information systems

All questions regarding the usefulness of the IS had a score over 5 which confirms information systems to be useful in primary health care provider's job (Table 1). All the questions about the ease of use also scored over 5 showing information systems to be rather easy to use (Table 1). Table 1 gives an overview of the primary health care providers' answers to the TAM questions which are showing participants' attitude towards IS.

	MEAN
Using information systems would enable me to accomplish tasks more quickly	5,6
Using information systems in my job would improve my job performance	5,7
Using information systems in my job would increase my productivity	5,6
Using information systems would enhance my effectiveness on the job	5,7
Using information systems would make it easier to do my job	5,6
I would find information systems useful in my job	5,8
Learning to operate information systems would be easy for me	5,3
I would find it easy to get information systems to do what I want them to do	5,1
My interaction with information systems would be clear and understandable	5,1
I would find information systems to be flexible to interact with	5
It would be easy for me to become skilful at using information systems	5,2
I would find information systems easy to use	5
MEAN	
1 = extremely unlikely 2 = quite unlikely 3 = slightly unlikely	
4 = neither unlikely nor likely 5 = slightly likely 6 = quite likely	
7 = extremely likely	

Table 1: Responses to TAM questions

Table 2 is showing answers to the UTAUT questions. The highest rating of 6,6 shows that respondents think that using information systems is a good idea (Table 2). Participants tend to like working with information systems and feel that the organization has supported the use of information systems.

	MEAN

Using information systems is a good idea.	6,6
Working with information systems is fun.	5
I like working with information systems.	5,5
The organisation has supported the use of information systems.	5,9
I have the necessary resources to use information systems.	5,7
I feel apprehensive about using information systems.	3,5
Information systems are not compatible with other systems I use.	3,8
It scares me to think that I could lose a lot of information using information systems by hitting the wrong key.	4,1
I hesitate to use information systems for fear of making mistakes I cannot correct.	3,6
Information systems are somewhat intimidating to me.	2,8

MEAN		
1 = extremely unlikely	2 = quite unlikely	3 = slightly unlikely
4 = neither unlikely nor likely	5 = slightly likely	6 = quite likely
7 = extremely likely		

Table 2: Responses to the UTAUT questions

The lowest rating 2,8 is showing that participants are not intimidated by information systems and rating 3.5 is showing that they are also not scared about using them (Table 2).

4.4 Associations

Based on survey answers T-test analysis shows a very low association between frequency of use and users' confidence regarding computer and internet, a mild association between social media and e-mail frequency of use and users' attitude and a strong connection between smartphone and tablet frequency of use and users' confidence level (Table 3).

		T-Test
Computer	Frequency of use <-> confidence level	P = 0,12 > 0,05
Internet	Frequency of use <-> confidence level	P = 0,06 > 0,05
Smartphone	Frequency of use <-> confidence level	P = 0,007 < 0,05
Tablet	Frequency of use <-> confidence level	P = 0,00002 < 0,05
E-Mail	Frequency of use <-> confidence level	P = 0,03 < 0,05
Social media	Frequency of use <-> confidence level	P = 0,03 < 0,05

Table 3: Association between frequency of use and confidence

T-test results show a mean value of 31 for confidence which means that participants feel quite confident using information systems (Table 4). The usefulness value of 33 is showing that participants feel that the information system is quite useful during their work (Table 4).

	Confidence	Usefulness
Mean	31	33
	0--9 = Not at all	0--6 = Very unlikely
	10--18 = Rather not	7--12 = Quite unlikely
	19--27 = Somewhat	13--18 = Less unlikely
	28--36 = Quite	19--24 = Not at all
	37--45 = Very	25--30 = Less likely
		31--36 = Quite likely
		37--42 = Very likely
P(T<=t) two-tail	0,09	Significant level 0.05

Table 4: Association between confidence and usefulness

The p-value between confidence and usefulness is 0.09 which is higher than the significant level of 0.05 which states that the result is not statistically significant and indicates that there is no interconnection between confidence and usefulness answers (Table 4).

The ease-of-use mean value of 30 is showing that participants are less likely to believe that the information systems are easy to use for their work (Table 5).

	Confidence	Ease of use
Mean	31	30
	0--9 = Not at all	0--6 = Very unlikely
	10--18 = Rather not	7--12 = Quite unlikely
	19--27 = Somewhat	13--18 = Less unlikely
	28--36 = Quite	19--24 = Not at all
	37--45 = Very	25--30 = Less likely
		31--36 = Quite likely
		37--42 = Very likely
P(T<=t) two-tail	0,34	Significant level 0.05

Table 5: Association between confidence and ease of use

The p-value between confidence and ease of use is 0.34 which is higher than the significant level of 0.05 which states that the result is not statistically significant and there is no interconnection between confidence and information system ease of use answers (Table 5).

The mean value of 16 for participants' attitude towards information systems is showing that participants agree that using information systems is necessary and they are willing to use information systems (Table 6).

	Confidence	Likeability
Mean	31	16
	0--9 = Not at all	0--3 = Completely disagree
	10--18 = Rather not	4--6 = Disagree
	19--27 = Somewhat	7--9 = Generally disagree
	28--36 = Quite	10--12 = Average
	37--45 = Very	13--15 = Generally agree
		16--18 = Agree
		19--21 = Strongly agree
P(T<=t) two-tail	7,38E-33	Significant level 0.05

Table 6: Association between confidence and likeability towards IS

The p-value between confidence and likeability shows result 7.38E-33 which is lower than the significant level of 0.05 which confirms that the result is statistically significant, and an association exists between answers about confidence and likeability towards information systems (Table 6).

The mean value of 13 for participants' anxiety is showing that information system usage is causing tolerable anxiety for the participants (Table 7).

	Confidence	Anxiety
Mean	31	13
	0--9 = Not at all	0--4 = Completely disagree
	10--18 = Rather not	5--8 = Disagree
	19--27 = Somewhat	9--12 = Generally disagree
	28--36 = Quite	13--16 = Average
	37--45 = Very	17-20 = Generally agree
		21-24 = Agree
		25--28 = Strongly agree
P(T<=t) two-tail	2,29E-33	Significant level 0.05

Table 7: Association between confidence and anxiety

The p-value between confidence and anxiety is 2.29E-33 which is lower than the significant level of 0.05 which confirms an association exists between answers about confidence and anxiety (Table 7).

4.5 Participants' recommendations

The open-ended question in the survey was allowing participants to share proposals for how to improve the ease of use of the information systems at work. Regarding participants' proposals about improving ease of use of the information systems at work, the most offered suggestion is that various IS at work should have better compatibility with each other. Another suggestion from the participants is to receive user manuals for work programs and information systems. Furthermore, participants wish to have more digital skill training based on their individual needs.

5 Discussion

5.1 Significance of the study

To be a digitally competent health care professional, it is un-evitable to have very good basic computer skills. Computer skills are needed to use medical information systems, electronic health records and to easily share health-related information [6].

Health care providers who participated in this study seem to have rather high digital literacy levels by having a high frequency of use and confidence levels with various devices and information systems. A 2015 study [15] found that health care providers have low digital literacy skills, and a 2020 study [48] found that health care providers have low digital literacy skills yet again. A possible explanation for the contrast is that in Estonia hospitals, general practitioners and other health providers started to develop information systems and introducing the use of electronic health records already between 1990-2000 [49].

Family doctors and nurses use frequently in private and work life computer, Internet, smartphone, and e-mail and almost half of the respondents never use a tablet or social media in private life and work. This result is like previous studies that also found that health care providers are less frequent users of tablet and social media [28], [50]. Low use of social media at work and private life could be because health care providers' find social media to be distracting their work and daily activities [51].

Over half of the participants have started to use digital devices more both in private and work life due to the COVID-19 and 65% of participants have started to use information systems more frequently at work. In addition to that the participants have brought out that especially the use of email and phone to communicate with patients and colleagues has increased due to COVID-19, especially the higher use of Skype and Zoom for audio and video conferences. This finding is not surprising as due to COVID-19, remote health care has been implemented globally to reduce contagion.

Having found that participants feel quite confident using information systems and feel that information system is quite useful during their work but despite that, there is no interconnection between confidence and usefulness variables. This study shows that participants are less likely to believe that the information systems are easy to use during their work and states that there is no interconnection between confidence and information system ease of use answers. A previous study has shown the difficult system can be used with high confidence if the person has acquired the needed knowledge to use the system [52].

Answers about health care providers attitude towards information systems show that majority have a positive attitude. All responses regarding the usefulness of information systems show that information systems are useful in the jobs of primary health care providers who participated in the survey. Perceived ease of use and perceived usefulness are thought to be the key factors that define the users' adoption of IT and IS [9]. It suggests that before the new IS will be implemented, users should have a possibility to become familiar with the IT or IS through training. Previous studies have stated that investing in training is important for the successful implementation of new IT or IS [11], [28], [53].

All the answers about the ease of use shows information systems are rather easy to use for the primary health care providers. Moreover, answers show that the participants have a slight preference for working with information system because the statement "I like working with information systems" received an overall mean of 5,5, indicating that they slightly agree with that statement. Previous studies have shown that health care providers have a positive mindset about information systems, and they think that information systems help them do their job more efficiently [28], [34].

Participants feel that the organisation has supported them slightly with the use of information systems because the UTAUT questions show that the mean of the participants' answers to that statement is 5,9, indicating that participants are slightly agreeing with the statement. Previous research has found that when an organisation plans to implement a new information system, time and money should be invested in training the employees [28].

According to the T-test analysis, there is no relationship between frequency of use and confidence level regarding computer and Internet use, implying that users' confidence

level is unaffected by frequency of use. The T-test analyses, on the other hand, found association between smartphone, tablet, and e-mail frequency of use and confidence level results. It can be assumed that despite the digital devices and IS frequency of use, a health care provider who has a negative attitude toward using IT or IS has a higher level of anxiety, which can lead to a lower level of confidence in using digital devices and IS [10].

Findings show that there is no association between users' confidence and usefulness variables. The user might feel that digital devices or information systems are useful and needed at their daily or work life, although it does not mean they have high confidence level towards using digital devices or information systems. The digital literacy skill training could be possible solution to increase users' self-confidence level towards using digital devices and information systems [11].

No association was found between confidence and ease-of-use variables. This could be explained by the result that demonstrates participants' slight fear in making a mistake by pressing a wrong button which could lead to losing a lot of important information that cannot be undone.

The participants agree that using information systems is necessary and they are willing to use information systems and results show that there exists an association between answers about confidence and likeability towards information systems. A possible explanation could be that an individual with a positive outlook believes that they will be able to achieve their goals and is interested in learning, while a person who lacks confidence will believe that they lack the potential which can cause low interest [54].

In this study self-perceived anxiety in using IS of health care providers were low which could be related to the positive previous experience with devices and information systems. The survey shows that information system usage is causing tolerable anxiety for the participants and confirms an association exists between answers about confidence and anxiety. This can be explained by increased focus caused by anxiety to improve performance [55]. According to the ratings, participants in this study are not intimidated by information systems and are not even afraid of using information system, confirming that information systems do not scare the participants. Knowing that organizations provide necessary financial support is one of the most important aspects before providing digital skill training as it will affect the number of participants [56]. Organizations should

also set aside time for health care providers to attend training. Continuous digital skill training will raise user confidence levels and lower anxiety [28].

5.2 Study limitations

The main limitation of this study is the number of participants. The study was supposed to target around 150 primary health care providers but due to the COVID-19 pandemic, March, April, and May 2021 digital skill training were cancelled which ended the study with 69 participants.

Secondly, the limitation was that half of the respondents answered only half of some questions from what can assume that these respondents did not understand the question or did not want to answer the second part of the question. In the future, it is recommended to compile an online questionnaire with mandatory answers, or the author must be present to guide the participants on how to complete the questionnaire.

As the age groups had a different size, it was not suitable to compare the age groups with each other which set the limitation for data comparison. In the future, it is necessary to have age groups of the same size to be able to do data comparison.

5.3 Recommendations

It is necessary to maintain Estonian primary health care providers positive attitude towards digital devices and information systems. The participants have suggested that the workplace could provide training in digital skills or provide a user manual for digital tools and information systems to maintain users' self-confidence and positive attitude towards digital devices and information systems.

Regarding participants' proposals about improving ease of use of the information systems at work, the most offered suggestion is that various IS at work should have better compatibility with each other. The employers should be up to date with new IT and IS solutions that allow better compatibility between various information systems and exchange old information systems with better solutions.

The author conducted a research about primary health care providers' digital literacy skills and attitude towards information systems before the digital skills training but, future

research could be done about how the digital skill training affected the digital literacy skills of the participants.

6 Summary

Health care providers' digital literacy skills have become highly important due to the digitalization of health care. To access medical information systems, electronic health records, and safely share health-related information, a technologically skilled health care professional must have good basic computer skills. Previous studies show that many health care providers have low digital skill levels which is why their attitude towards information systems is negative and this can cause poor documentation and low use of digital solutions at work.

This study aims to find out the self-assessment of Estonian primary health care providers in terms of the frequency of use, attitude and self-confidence of digital devices and information systems. In addition, the aim is to find out whether the self-confidence of Estonian primary health care providers' in digital literacy is related to the frequency of use of digital devices and information systems and whether their level of self-confidence in digital literacy is related to the attitude towards information systems. To fulfil the aims of this study, a quantitative paper-based survey was conducted by using the purposive sampling method. Data were collected from 69 Estonian primary health care providers at the digital skill training event.

Findings from this study show health care providers who participated in this study seem to have rather high digital literacy levels by having a high frequency of use and confidence levels with various devices and information systems. Although, there is no relationship between frequency of use and confidence level regarding computer and Internet use. However, study found association between smartphone, tablet, and e-mail frequency of use and confidence level results.

The answers for usefulness, ease-of-use, likeability, and anxiety questions are showing users' attitude towards IS. The majority of the primary health care providers who took part in this study have a positive attitude towards information systems. Participants find

information systems to be important for work efficiency. Findings show that there is no association between users' confidence and usefulness answers. In addition, no association was found between confidence and ease-of-use answers. The participants agree that using information systems is necessary and they are willing to use information systems and results show that there exists an association between answers about confidence and likeability towards information systems.

The study results show that information system usage is causing tolerable anxiety for the participants and confirms an association exists between answers about confidence and anxiety. Estonian primary health care providers' have low or no fear at all regarding the use of information systems and rather agree that work is providing the necessary resources to use information systems. However, the participants have suggested that the workplace could provide training in digital skills or provide a user manual for digital tools and information systems to maintain confidence in using digital devices and positive attitude towards information systems.

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Appendix 1 – Questionnaire

Sugu
☐ Naine
☐ Mees

Vanusgrupp
☐ (25-34) ☐ (35-49) ☐ (50-64) ☐ (65-74) ☐ (75+)

Töökogemus
☐ aastat

Suhtluskeel
☐ Eesti ☐ Vene ☐ Muu .....

Ametikoht
☐ Perearst ☐ Pereõde

Töökoha asukoht vastavalt elanikearvule:
☐ alla 5000 ☐ 5001-10 0000 ☐ 10 001-50 000 ☐ 50 000+

1. Kui tihti kasutate allpool nimetatuid oma töös ja eraelus?

	Mitte kunagi	Eraelus	Tööl	Eraelus ja tööl
Arvuti				
Internet				
Nutitelefon				
Tahvelarvuti				
E-mail				
Sotsiaalmeedia (Facebook, Instagram, Twitter)				

2. Kui enesekindlalt Te ennast tunnete kasutades allpool nimetatuid

	Mitte üldse	Pigem mitte	Kuigivõrd	Üsna	Väga
Arvuti					
Microsoft Word					
Microsoft PowerPoint					
Microsoft Excel					
Nutitelefon					
Tahvelarvuti					
E-mail					
Internet					
Sotsiaalmeedia (Facebook, Instagram, Twitter)					

3. Kuidas nõustute järgmiste väidetega?
Märge: Infosüsteemid (IS)

Ebatõenäoline --Tõenäoline
väga, üsna, vähe, mitte üldse, vähe, üsna, väga

Infosüsteemide kasutamine aitab mul ülesandeid sooritada kiiremini	☐	☐	☐	☐	☐	☐	☐
Infosüsteemide kasutamine aitab mul parandada minu töö tulemuslikkust	☐	☐	☐	☐	☐	☐	☐
Infosüsteemide kasutamine minu töös suurendab minu töö produktiivsust	☐	☐	☐	☐	☐	☐	☐
Infosüsteemide kasutamine suurendab minu töö efektiivsust	☐	☐	☐	☐	☐	☐	☐
Infosüsteemide kasutamine muudab minu töö tegemise lihtsamaks	☐	☐	☐	☐	☐	☐	☐
Leian, et infosüsteemide kasutamine minu töös on kasulik	☐	☐	☐	☐	☐	☐	☐
Minu jaoks on lihtne õppida kasutama infosüsteeme	☐	☐	☐	☐	☐	☐	☐
Minu jaoks on lihtne jagada infosüsteemile käske	☐	☐	☐	☐	☐	☐	☐
Minu koostöö infosüsteemidega on lihtne ja arusaadav	☐	☐	☐	☐	☐	☐	☐

Leian, et infosüsteemid on koostöös paindlikud	
Kohanen uute infosüsteemidega kiirelt	
Leian, et „IS“ kasutamine on minu jaoks kerge	

4. Kuidas nõustute järgnevate väidetega

	(Üldse ei nõustu) 1	2	3	4	5	6	7 (Nõustun väga)
Infosüsteemide kasutamine on vajalik							
Infosüsteemide kasutamine on lõbus							
Mulle meeldib infosüsteeme kasutada							
Minu töökoht toetab infosüsteemide kasutamist							
Mul on eraelus vajalikud vahendid infosüsteemide kasutamiseks							
Pelgan infosüsteemide kasutamist							
Infosüsteemid ei ühildu teiste kasutusel olevate infosüsteemidega							
Mind hirmutab mõte, et suur hulk informatsiooni võib kaduda vale nupu vajutamisel							
Pelgan infosüsteemide kasutamist, kuna kardan teha vigu, mida ma ei saa parandada							
Infosüsteemid on minu jaoks pigem hirmutavad							

5. Kuidas on COVID19 olukord mõjutanud Teie üldist tehnoloogiliste vahendite kasutamissagedust (sh tööga mitte seotult)

Kasutan vähem	Kasutan rohkem	Kasutus ei ole muutunud	Ei oska hinnata

6. Kuidas on COVID19 olukord mõjutanud Teie tööga seotud infosüsteemide(sh kaugvastuvõtud, ...) kasutamissagedust?

Kasutan vähem	Kasutan rohkem	Kasutus ei ole muutunud	Ei oska hinnata

Teie täpsustus:

.....

.....

.....
..

7. Teie soovid, ettepanekud infosüsteemide kasutusmugavuse parandamiseks:

.....

.....

Appendix 2 – Result figures

	%
Gender	
Man	7
Woman	93
Age	
25-34	8
35-49	25
50-64	45
65-74	22
75+	0
Lenght of tenure (years)	
0.-1.	3
2.-3.	1
4.-6.	6
7.-10.	3
11+	87
Language	
Estonian	100
Russian	16
Other	1
Profession	
Nurse	44
Family doctor	56
Job location according to population	
under 5000	13
5001-10000	20
10001-50000	44
50000+	23

Demographic details of survey respondents.

Variable	Age & Profession	Work (n=...)	Private life & work (n=...)	Private Life (n=..)	Never (n=..)	Work %	Private life & Work %	Private life %	Never%
Computer									
	25-34	2	4	0	0	3	6	0	0
	35-49	0	17	0	0	0	25	0	0
	50-64	2	29	0	0	3	42	0	0
	65-74	1	14	0	0	1	20	0	0
	Family do	1	38	0	0	1	55	0	0
	Nurse	4	26	0	0	6	38	0	0
Internet									
	25-34	0	6	0	0	0	9	0	0
	35-49	0	17	0	0	0	25	0	0
	50-64	0	31	0	0	0	45	0	0
	65-74	0	15	0	0	0	21	0	0
	Family do	0	39	0	0	0	56	0	0
	Nurse	0	30	0	0	0	44	0	0
Smart pho									
	25-34	0	3	3	0	0	4	4	0
	35-49	0	13	4	0	0	19	6	0
	50-64	0	23	6	2	0	34	9	3
	65-74	0	13	1	1	0	19	1	1
	Family do	0	33	4	2	0	48	6	3
	Nurse	0	19	10	1	0	27	15	1
Tablet									
	25-34	0	0	3	3	0	0	4	4
	35-49	0	3	9	4	0	4	13	6
	50-64	0	8	7	16	0	12	10	25
	65-74	0	6	4	5	0	9	6	7
	Family do	0	11	10	18	0	16	15	26
	Nurse	0	6	13	10	0	9	19	15
E-Mail									
	25-34	0	6	0	0	0	9	0	0
	35-49	0	16	1	0	0	23	1	0
	50-64	0	30	0	1	0	44	0	1
	65-74	0	15	0	0	0	22	0	0
	Family do	0	39	0	0	0	57	0	0
	Nurse	0	28	1	1	0	41	1	1
Social me									
	25-34	0	2	3	0		4	5	0
	35-49	0	6	6	1		10	10	2

	50-64	0	8	7	13		14	12	22
	65-74	1	3	5	3		5	9	5
	Family do	1	8	9	15		14	15	26
	Nurse	0	11	12	2		18	21	4

Differences in frequency of use

Variable	Age & Profession	Not at all (n=...)	Rather not (n=...)	Some what (n=...)	Quite (n=...)	Very (n=...)	Not at all (%)	Rather not (%)	Some what (%)	Quite (%)	Very (%)
Computer											
	25-34	0	0	0	4	2	0	0	0	6	3
	35-49	0	0	4	9	4	0	0	6	13	6
	50-64	0	1	8	20	1	0	1	12	29	1
	65-74	0	0	8	7	1	0	0	12	10	1
	Family doctor	0	0	15	21	2	0	0	23	30	3
	Nurse	0	1	5	19	6	0	1	7	27	9
MS Word											
	25-34	0	0	1	4	1	0	0	1	6	1
	35-49	0	1	0	11	4	0	1	0	16	6
	50-64	3	2	11	15	0	4	3	16	23	0
	65-74	0	0	10	4	2	0	0	14	6	3
	Family doctor	1	3	18	15	2	1	4	26	23	3
	Nurse	2	0	4	19	5	3	0	6	27	7
MS Power point											
	25-34	0	0	1	4	1	0	0	1	6	1
	35-49	1	3	4	8	1	1	4	6	12	1
	50-64	8	12	7	4	0	12	17	10	6	0
	65-74	5	5	1	4	0	8	8	1	6	0
	Family doctor	8	17	7	7	0	12	25	10	10	0
	Nurse	6	3	6	13	2	9	4	9	18	3
MS Excel											
	25-34	1	1	0	5	0	1	1	0	8	0
	35-49	0	4	6	6	1	0	6	9	9	1
	50-64	8	10	8	3	0	12	14	12	4	0
	65-74	4	2	6	4	0	6	2	9	6	0

	Family doctor	9	13	12	5	0	13	19	16	8	0
	Nurse	4	4	8	13	1	6	6	12	19	1
Smart phone											
	25-34	0	0	0	3	3	0	0	0	4	4
	35-49	0	0	4	8	5	0	0	6	12	8
	50-64	1	1	7	20	2	1	1	10	28	3
	65-74	0	0	5	8	2	0	0	8	12	3
	Family doctor	1	0	10	20	6	1	0	16	28	9
	Nurse	0	1	6	19	6	0	1	9	27	9
Tablet											
	25-34	0	1	1	1	3	0	1	1	1	4
	35-49	2	0	7	6	2	3	0	10	9	3
	50-64	10	1	6	13	1	15	1	9	19	1
	65-74	3	3	5	4	0	4	4	8	6	0
	Family doctor	11	3	11	13	2	16	4	16	19	3
	Nurse	4	2	8	11	4	6	3	11	16	6
E-Mail											
	25-34	0	0	0	2	4	0	0	0	3	6
	35-49	0	0	2	8	7	0	0	3	12	10
	50-64	1	0	1	17	13	1	0	1	24	17
	65-74	0	0	3	9	3	0	0	4	13	4
	Family doctor	0	0	4	20	15	0	0	6	29	22
	Nurse	1	0	2	16	11	1	0	3	23	16
Internet											
	25-34	0	0	0	3	3	0	0	0	4	4
	35-49	0	0	2	9	6	0	0	3	13	9
	50-64	1	0	1	20	9	1	0	1	29	13
	65-74	0	0	3	10	2	0	0	4	15	3
	Family doctor	0	0	4	25	10	0	0	6	36	15
	Nurse	1	0	2	17	10	1	0	3	24	15
Social media											
	25-34	0	0	0	4	1	0	0	0	7	2
	35-49	2	1	5	3	3	3	2	8	5	5
	50-64	11	2	4	10	0	19	3	7	17	0
	65-74	3	2	2	4	2	5	3	3	7	3
	Family doctor	14	3	7	9	1	24	5	12	15	2
	Nurse	2	2	4	12	5	3	3	7	20	8

Confidence levels of the survey respondents

Using information systems would enable me to accomplish tasks more quickly	MEAN
25-34	6,2
35-49	5,1
50-64	5,7
65-74	5,7
Family doctor	5,8
Nurse	5,3
Using information systems in my job would improve my job performance	
25-34	6,2
35-49	5,2
50-64	5,9
65-74	5,9
Family doctor	6
Nurse	5,4
Using information systems in my job would increase my productivity	
25-34	6
35-49	5,2
50-64	5,8
65-74	5,7
Family doctor	5,8
Nurse	5,4
Using information systems would enhance my effectiveness on the job	
25-34	6
35-49	5,3
50-64	5,8
65-74	5,7
Family doctor	5,9
Nurse	5,4
Using information systems would make it easier to do my job	
25-34	5,8
35-49	5,1
50-64	5,8
65-74	5,7
Family doctor	5,9
Nurse	5,1
I would find information systems useful in my job	
25-34	6,2
35-49	5,2
50-64	6
65-74	5,8
Family doctor	6,1
Nurse	5,4

Responses to TAM questions.

Learning to operate information systems would be easy for me	MEAN
25-34	6,2
35-49	5,3
50-64	5,3
65-74	5
Family doctor	5,3
Nurse	5,2
I would find it easy to get information systems to do what I want them to do	
25-34	5,8
35-49	5,1
50-64	5,1
65-74	4,8
Family doctor	5,1
Nurse	5
My interaction with information systems would be clear and understandable	
25-34	5,8
35-49	5
50-64	5,1
65-74	5,1
Family doctor	5,3
Nurse	5
I would find information systems to be flexible to interact with	
25-34	5,7
35-49	4,9
50-64	4,7
65-74	5,2
Family doctor	5,1
Nurse	4,8
It would be easy for me to become skillful at using information systems	
25-34	5,7
35-49	5
50-64	5,2
65-74	5,1
Family doctor	5,3
Nurse	5
I would find information systems easy to use	
25-34	5,5
35-49	4,8
50-64	5,1
65-74	4,8
Family doctor	5,4
Nurse	4,9

Responses to TAM questions

	MEAN
Using information systems is a good idea	
25-34	6,5
35-49	6,3
50-64	6,7
65-74	6,8
Family doctor	6,8
Nurse	6,3
Working with information systems is fun	
25-34	5,3
35-49	4,9
50-64	4,7
65-74	5,6
Family doctor	5
Nurse	4,9
I like working with information systems	
25-34	5,8
35-49	5,8
50-64	5,1
65-74	6
Family doctor	5,5
Nurse	5,5
The organisation has supported the use of information systems	
25-34	5,8
35-49	6,1
50-64	5,5
65-74	6,4
Family doctor	6
Nurse	5,6
I have the necessary resources to use information systems	
25-34	6,3
35-49	5,6
50-64	5,3
65-74	5,9
Family doctor	5,8
Nurse	5,5
I feel apprehensive about using information systems	
25-34	2
35-49	2,8

50-64	3,7
65-74	3,9
Family doctor	3,5
Nurse	3,3
Information systems are not compatible with other systems I use	
25-34	3,7
35-49	4,1
50-64	3,9
65-74	3,5
Family doctor	4
Nurse	3,7
It scares me to think that I could lose a lot of information using information systems by hitting the wrong key	
25-34	3
35-49	3,9
50-64	4,2
65-74	4,4
Family doctor	4,1
Nurse	4
I hesitate to use information systems for fear of making mistakes I cannot correct	
25-34	2,5
35-49	3,8
50-64	3,6
65-74	3,9
Family doctor	3,5
Nurse	3,8
Information systems are somewhat intimidating to me	
25-34	2
35-49	2,6
50-64	2,9
65-74	3,4
Family doctor	2,6
Nurse	3,1

Responses to UTAUT questions