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ACCEPTANCE OF REMOTE APPOINTMENT AND VIRTUAL DOCTOR SERVICES – REASONS FOR LOW ACCEPTANCE AND POSSIBLE INCENTIVES TO PROMOTE USE IN DIGITAL HEALTH

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Vanheneva väestö, vähenevä hoitohenkilökunta sekä Korona-pandemian kaltaiset kriisitilanteet tuovat valtavia paineita jo valmiiksi rasittuneille terveydenhuolto-organisaatioille sekä -järjestelmälle. Uusissa teknologioissa, kuten etävastaanotto ja virtuaalilääkäri -tyyppisissä digitaalisissa terveyspalveluissa voi piillä ratkaisu resurssiongelmiin, mutta niiden hyödyntäminen ei ole vielä täydessä potentiaalissaan. Tämän tutkielman tavoitteena on selvittää syitä ratkaisuiden käyttämättömyydelle ja toisaalta keinoja, joilla voitaisiin kannustaa palveluiden laajempaan hyödyntämiseen.
Tutkimus suoritettiin määrällisenä tutkimuksena ja aineisto kerättiin suorittamalla kyselytutkimus kohdeorganisaatiolle hyödyntäen Webropol -verkkokyselyohjelmistoa. Kohdeorganisaationa toimi terveydenhuollon digitalisaation parissa työskentelevä organisaatio, joka toivoi pysyvänsä nimettömänä tutkimuksen yhteydessä. Tutkimuksen tuloksia ei voida pitää täysin uskottavina otoksen koon sekä analyysiteknisten tekijöiden vuoksi, mutta tulokset osoittavat, että suurimpia tekijöitä palveluiden käyttämättä jättämiselle ovat käytettävyystekijät ja toisaalta mahdollisia käytön kannustimia hintatekijät, alennukset, parempi käytön tuki sekä käyttöliittymien räätälöitävyys.

Asiasanat: digitaaliset terveyspalvelut, teknologian hyväksyntä, etävastaanotto, käytön kannustimet

ABSTRACT

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An aging population, a dwindling healthcare workforce, and crisis situations such as the Corona pandemic bring on immense pressure to health care organizations and systems that are already at their limits. New technologies, such as remote appointment and virtual doctor type digital health services, could be part of the solution to the resource problem, but their utilization has not yet reached its full potential. The goal of this thesis is to find reasons for low levels of utilization, and also to find ways to potentially incentivize further use.
The study was conducted as quantitative research and the material was gathered by conducting a survey research using the Webropol web survey application. The target organization was an organization working with healthcare digitalization yet wished to remain anonymous. The results of the study can be seen as inconclusive because of a small sample size some issues in the analysis, but the findings show that the biggest factors in non-utilization of these services are usability factors and on the other hand utilization can be incentivized via price factors, discounts, better support for use and enabling customization of user interfaces.

Keywords: digital health, technology acceptance, virtual doctor, remote appointment, use incentives

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1 INTRODUCTION

1.1 Motivation for the study

Digitalization has revolutionized the way we do business and conduct our lives on multiple levels. Everything from past-time activities to government services are being digitalized. One of the selling points of digitalized services is the ease of access and low threshold of utilizing them. In the past few years, the pandemic caused by the COVID-19 virus sent shockwaves through societies and markets around the globe: large manufacturers suspended production temporarily, popular tourist destinations became deserted, flights were cancelled, and popular sports leagues were suspended (Fernandes, 2020).

People were confined to their homes for long periods of time and had to socially distance themselves from each other in order to slow the spread of the virus down and save the already strained healthcare resources to those that desperately needed them. This is something that the digitalization of healthcare services could – and partly did – help with.

Even though we have options for digitalized healthcare services such as remote appointments, online self-care instructions and remote prescription writing, the utilization of said services is low compared to what it could be. Opting for digitalized healthcare services when no urgent care is needed, could mean saving resources for those in a bigger need of them, faster throughput times, and a more resilient healthcare system in times of crisis – such as the Covid-19 pandemic. In addition to lessening the strain on healthcare systems during times of crisis, utilizing digitalized healthcare applications could help with the growing staff shortage in general as the population ages in many countries, such as Finland (Hetemaa et al., 2022).

As stated, we live in an increasingly digitalized world, and digitalization as a phenomenon has been studied immensely since being coined, but healthcare and its digitalization, and especially the acceptance of digitalized healthcare

services have had less attention. Some studies show that only roughly half of the population use digital health services for more menial tasks, such as receiving and reviewing test results, renewing subscriptions or scheduling appointments, and as little as 2% use them for actual appointments (Heponiemi et al., 2022). There definitely is room for improvement when it comes to utilization of these new technologies and services.

1.2 Research questions

Seeing that technology acceptance plays a large role in how, and to what extent, technological applications are utilized (Amoako-Gyampah & Salam, 2004) or if they are utilized at all (Taherdoost, 2019). Technology acceptance playing a crucial role in the utilization of all technology applications, means that a similar, if not a bigger effect in the case of managing one's health, must exist in the case of remote appointments and other similar types of digital healthcare solutions as well. The research problems that were formulated to gain insights on digital health, the technology's acceptance and possible incentives to help with the discovered obstacles are:

> *What are the reasons for individuals to avoid using remote appointment and virtual doctor type digital healthcare services?*
>
> *Are there any incentives that could be used to encourage individuals to utilize these services?*

The theory section of the thesis will aim to find suitable models and theories from the technology acceptance literature to leverage and utilize in the research portion of the thesis where we will aim to gain answers to the formulated research problems.

1.3 Thesis structure

In the theory part of the thesis earlier theory of TA and digital health is reviewed and described. First the different models and theories that comprise the foundation works for the modern and most widely utilized TA model, the Unified Theory of Acceptance and Use of Technology (UTAUT) model are reviewed, after that the UTAUT model itself is described, analyzed and an explanation is given for why UTAUT, or a modification of UTAUT, is a well-suited model in the case of digital health acceptance. The second section of the theory part focuses on digital health, its definitions and how it possibly differs from general technology and therefore also requires a modified TA model applied to it.

In the fourth chapter research methods are reviewed and explained, including a look into quantitative research and why a quantitative research method was chosen for this study. They survey will also be reviewed: an overview of the sample and survey form will be given, and the survey, as well as its results will be analyzed. Based on the gathered results, the survey process and sample, an assessment of the reliability and validity of the study will be given.

The fifth chapter will cover the findings of the survey in the context of our study and try to provide answers to the formulated research problems. In the sixth chapter we will gather the conclusions from our study and the final, ninth, chapter will be used to provide a summary of the study, its findings and the implications of said findings.

The thesis will focus on remote appointment and virtual doctor -style digital health solutions and their acceptance between individuals. In the theory section these sorts of applications have been defined to be a part of the telemedicine sub-section of digital health. Health maintenance focused solutions, wearable health and other digital health sub-types are deemed to be out of the scope of this study.

2 THEORETICAL BACKGROUND FOR THE ACCEPTANCE OF TECHNOLOGY

Acceptance of technology or technology acceptance (TA) refers to the degree to which individuals are willing to accept, adopt and utilize new technologies (Davis 1989; Davis et al., 1989). Understanding TA is important because it can help predict and influence the acceptance and use of technological applications. TA has been studied extensively in the information systems field and has been found to be a key determinant on the success or failure of applications of said technology (Venkatesh et al., 2003). This part of the thesis will cover TA theories and models that were the basis for the most well-known and widely used modern TA theory: the Unified Theory of Acceptance and Use of Technology (UTAUT), as well as other relevant TA theories. UTAUT itself and reasons on why it is a good model to use when trying to gain insights on digital healthcare acceptance in the case of remote appointments and virtual doctor solutions will be presented. UTAUT factors and extensions of the theory are also described because it was ultimately selected as the base of the conducted survey research.

2.1 Theory of Reasoned Action (TRA)

One of, if not the oldest, utilized theories relating to TA is the Theory of Reasoned Action (TRA). TRA can be seen as one of the foundation works for TA theory. In their work defining TRA, Martin Fishbein and Icek Ajzen describe a causal continuum that an individual goes through each time they perform an action. The individual's beliefs, attitude, existing social norms and the individual's intentions all have an effect and ultimately lead to a certain type of behavior or action. (Fishbein & Ajzen, 1977)

Like stated, the theory was first proposed by Ajzen and Fishbein, but has been widely studied and tested in the following years. The theory has been used to understand and predict a wide range of behaviors, including health-related, environmental and consumer behaviors. According to the theory, an individual's

behavior is determined by their intention to engage in that behavior, which is in turn determined by their attitudes and subjective norms. Attitudes refer to an individual's positive or negative evaluations of a particular behavior, while subjective norms refer to the perceived social pressure to engage in that behavior (Fishbein & Ajzen, 2010).

Even though TRA is considered as a relevant foundation theory for many of the newer TA theories, it has received some critique and some limitations have been observed even by its creators. One of the weaknesses of TRA is the fact that according to Ajzen and Fishbein (1977) it isn't applicable to all human behavior. Actions that have been perfected or that are very simple can be seen almost as automated actions by the individual do not fit into the theory. Such actions could be for example turning the page when reading a book or a search and rescue worker arriving to a scene and doing a procedure that has been trained and drilled to perfection. The role of social norms in this continuum has also been questioned (Sarver, 1983).

2.2 Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM) is a theoretical model that explains how individuals adopt and use new technologies and technological applications. According to TAM, the likelihood that an individual will adopt and use a new technology is determined by two primary factors: perceived usefulness and perceived ease of use. Perceived usefulness refers to the degree to which an individual believes that using a particular technology will enhance their job performance or daily life. Perceived ease of use, on the other hand refers to the degree to which and individual believes that using a particular technology will be free of effort or easy to grasp. (Davis, 1989)

TAM also proposes that the two primary factors, perceived usefulness and perceived ease of use, influence the formation of an individual's intention to use a technology, which in turn leads to actual use: the more an individual perceives a technology to be useful and easy to use, the more likely they are to have an intention to use it, and the more likely they are to actually use it. (Davis, 1989).

TAM has received several extensions to it since its introduction. The extensions have sought to address limitations of the original model and incorporate additional factors that may influence the adoption and use of technology. One of the more notable extensions of TAM is TAM2 developed by Venkatesh and Davis. TAM2 added a concept of "*facilitating conditions*" as a third predictor of intention to use technology. Facilitating conditions refer to the resources and support that is available to an individual trying to utilize said technology (Venkatesh & Davis, 2000). These facilitating conditions could be tutorials on use or a service desk to help the users with a certain system.

More specifically, TAM has also been extended within the context of our study, health technology, as well. Tsai (2014) formulated their own model which incorporated an extension of TAM as well as the Health Belief Model (HBM) to

answer to the requirements of a scenario where the technology incorporates elements of health maintenance or is a health management technology. From extended TAM they used social trust, institutional trust, perceived ease of use and perceived usefulness as factors, and from the HBM they used perceived susceptibility, perceived severity, perceived benefits, perceived barriers and cues to action as constructs. These nine factors together would lead to certain usage intention according to the model. (Tsai, 2014)

A good insight that can be gained from Tsai's model and applying these TA models in the context of health care and digital health is that, even though some of the models are extremely useful and have been extended – like TAM2 and TAM extensions – the health care aspect brings forth factors that don't necessarily have to be taken into consideration when it comes to general technology. A good example of this is the social trust and institutional trust dimensions in this integrated model of TAM and HBM: when we are talking about applications of technology that have a potential effect on the individual's health, trust becomes a very critical factor. This is something that we have to keep in mind when selecting a model or theory to apply in our own study. Tsai's model is presented in figure 1.

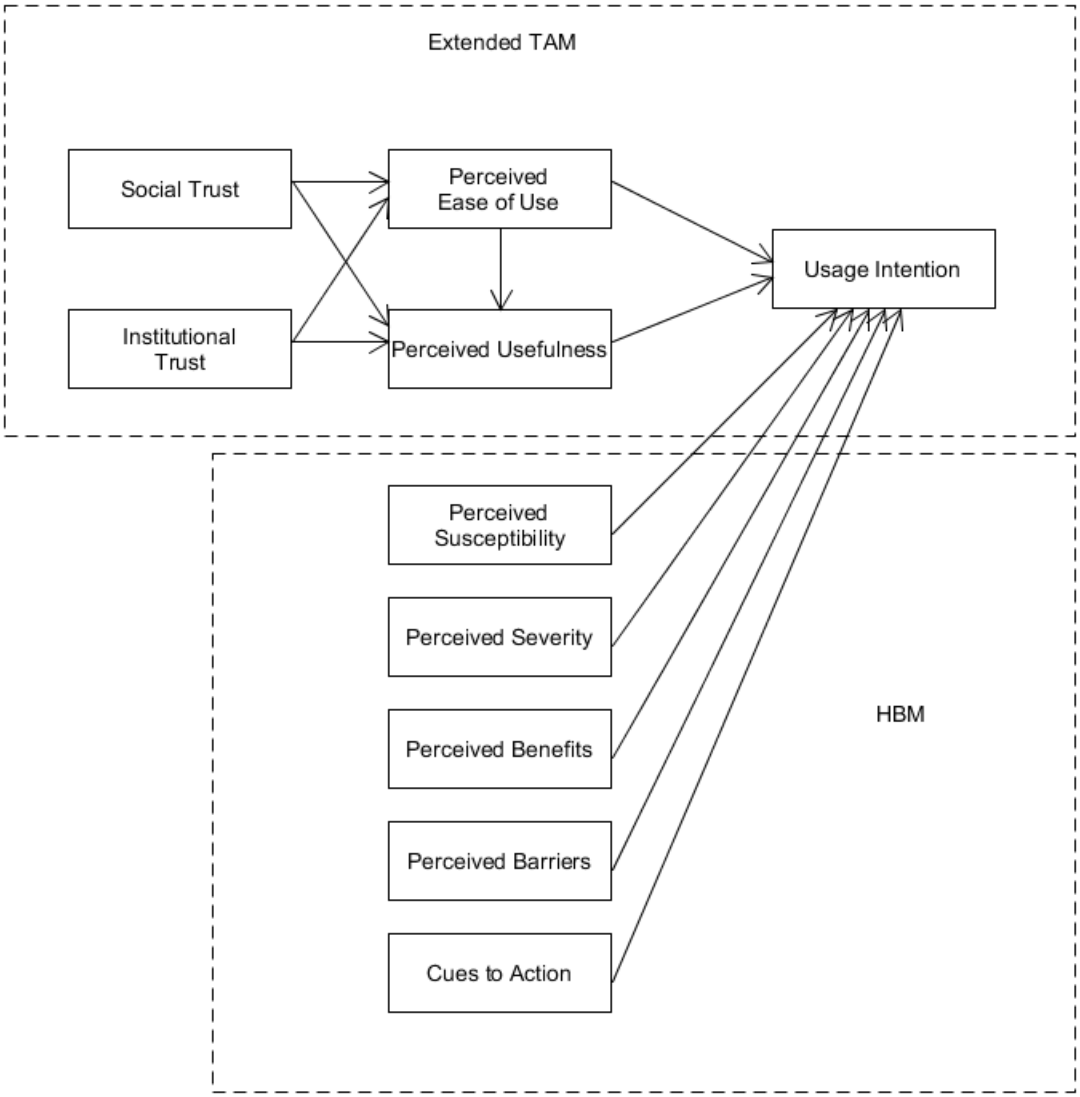

FIGURE 1: Integration of extended TAM and HBM (Tsai, 2014)

2.3 Theory of Planned Behavior (TPB)

Theory of planned behavior (TPB) is a social psychological theory that explains the relationship between attitudes, subjective norms, and perceived behavioral control, and the prediction of intentions to engage in certain behavior. According to TPB, attitudes toward a behavior, subjective norms, and perceived behavioral control are important predictors of behavioral intentions and resulting behavior. Attitudes are seen as evaluations or feelings that an individual holds towards a behavior, and they can be positive negative. Subjective norms refer to an individual's perception of the expectations and opinions of others regarding a behavior.

Perceived behavioral control is an individual's perception of their ability to perform a certain behavior. (Ajzen, 1985)

The formulated TPB differs from TRA in the fact that, TRA assumes that behaviors are under volitional control and the theory's accuracy decreases as the individual's control over different factors diminishes. TPB begins from the assumption that social behavior follows more or less well-developed plans. The success of executing a behavioral plan depends not only on the given effort, but also on the individual's control over different factors, such as skills, abilities, time, opportunity and for example will power.

Like the other covered theories, TPB has also been applied to a variety of fields, including health, marketing and environmental psychology (Ajzen, 1991) to predict and explain a wide range of behaviors, including smoking, exercise, and environmentally friendly behaviors. TPB's strength is that it considers the influence of peers, which can be seen as significant in many of the applicable situations, technologies and fields.

2.4 Model of PC Utilization (MPCU)

The model of PC utilization (MPCU) was formulated by Thompson and colleagues as a competing model for TRA. According to MPCU social norms and the three components of expected consequences: complexity of use, fit between job and PC capabilities, and long-term consequences have a strong influence on utilization. As a result of the findings, Thompson and colleagues called attention to the importance of training programs and organizational policies that could be used to enhance or modify the expectations. (Thompson et al., 1991)

Thompson and colleagues later tested and validated their theory that expanded on the framework proposed by Triandis (1979). Out of the six factors in MPCU:

- Social factors
- Complexity
- Job fit
- Long-term consequences
- Facilitating conditions
- Affect to utilization

They felt that the most important were applicability to current job – job fit, professional development – social factors and ease of use – complexity. They also stated that as experience with the technology grows the emphasis should shift towards future benefits – long-term consequences. The importance of job fit, peer use and social norms stayed the same, so they should be stressed with experienced and inexperienced users alike. (Thompson et al., 1994)

2.5 Innovation Diffusion Theory and Diffusion of Innovations theory (IDT & DOI)

Innovation diffusion theory is social science model that explains how, why, and at what rate new ideas and technology spread through cultures and populations. Moore and Benbasat (1996) combined research dealing with individuals' reactions to new products or processes in the form of diffusion of innovations (DOI) theory and behavior theory in the form of TRA to form their own extension or modification of IDT. The original IDT was formulated by Rogers in 1982 but was intended as a more general model that explains the adoption of any type of innovation, not just information technology innovations. The DOI model by Moore and Benbasat deals exclusively with technology innovations in organizations.

The extended model by Moore and Benbasat (1996) posits that an individual's decision to adopt an innovation is influenced by five key factors:

- Relative advantage – referring to the perceived benefit of the innovation compared to current method being used
- Compatibility – the extent to which the innovation is perceived to be compatible with existing values, beliefs, and practices of the organization and its members
- Complexity – the perceived difficulty of using and implementing the innovation
- Trialability – referring to the extent to which the innovation can be tested or experimented with on a small scale before fully implementing
- Observability – how are the results of using the innovation visible to others

Since digital health and its subtypes are very much tied into IT, we will rely more on the IDT by Moore and Benbasat (1996) because of its more IT focused take on innovation diffusion.

2.6 Motivational Model (MM)

Another model that can be applied to the research of technology acceptance and has been used as a foundation for many of the related theories, is the so-called motivational model (MM). One of the formulations of MM is the Expectancy Theory (ET). According to ET an individual's motivation to use a new technology is influenced by their expectations about the benefits of said technology and the cost of using it, as well as the perceived ease of use and general usefulness of the technology – if an individual deems a technology useful, easy to use and capable

of helping them achieve their goals, they are more likely to be motivated to use that technology. (Davis, 1989)

Another formulation of the MM is the Self-Determination Theory. This theory suggests that individuals are more likely to be motivated to use a new technology, if they feel that the technology aligns with their values and goals, and if they feel that they have control over the technology and its use. If users feel that a technology is imposed upon them, they might not be motivated to use the technology. (Deci & Ryan, 1985) Between the different formulations the basic idea of MM stays the same: individual's motivation to use a new technology is influenced by their expectations about the technology and their perception of the benefits and costs of using it, as well as their sense of autonomy and self-determination in relation to the technology.

2.7 Social Cognitive Theory (SCT)

Social Cognitive Theory (SCT) is yet another psychological theory that was utilized in formulating these TA and other related theories and models and has been used to study TA in general. SCT explains how individuals acquire and maintain knowledge, attitudes and behaviors through social interactions and experiences (Bandura, 1986). SCT posits that human behavior is influenced by three factors: personal, behavioral and environmental. Personal factors include individual characteristics such as attitudes, values and beliefs, behavioral factors refer to specific actions and activities that individuals engage in. Environmental factors are formed by the social and physical context in which the individual lives and interacts in.

According to SCT, individuals' attitudes toward technology are influenced by their beliefs about the usefulness and ease of use of the technology, as well as their perceived social influence and the presence of positive social influences (Venkatesh et al., 2003). As in the other presented foundation model, TAM, perceived ease of use and perceived usefulness are present, but in addition the perceived social influence and facilitative social influences have been taken into consideration. In short, SCT proposes that individuals are more likely to accept and use new technologies if they believe it's useful, easy to use and they are influenced by others who use and endorse the technology.

2.8 Unified Theory of Acceptance and Use of Technology (UTAUT)

Probably the most well-known and modern TA theory is the Theory of Acceptance and Use of Technology (UTAUT). The theory was formulated by Venkatesh and colleagues with the goal of gathering factors from the earlier theories into one, comprehensive theory to explain technology acceptance. The theory

proposes that behavioral intent, and finally use behavior, is formed by four main factors: performance expectancy, effort expectancy, social influence and facilitating conditions. These main factors are then moderated by four moderating factors: age, gender, experience, voluntariness. (Venkatesh et al., 2003)

2.8.1 UTAUT factors

The first factor presented in the theory by Venkatesh and colleagues (2003), performance expectancy, is defined as the extent to which a user trusts that a certain application of technology is going to help them with achieving the wanted result or complete a job task. This is seen as the strongest predictor of use intention out of the four main factors in the model. According to Venkatesh and colleagues' work (2003) there is a relationship between performance expectancy and the moderating factors gender and age: men and young individuals are more focused on performance expectations on average. Other studies in more specific settings (Marchewka & Kostiwa, 2007) have found no correlation between the constructs.

Effort expectancy is used to refer to how easy a certain application of technology is to use or how much effort a user must invest to be able to utilize it. A corresponding construct in TAM would be "*perceived ease of use*" or "*complexity*" in MPCU. Effort expectancy is seen to be moderated by age, gender and experience, with it having the most effect on behavioral intention for older women, who have little experience. (Venkatesh et al., 2003)

The social influence factor is describing the degree to which a technology user relies on on other people's opinions on whether or not they should use said technology or how they would view them if they used it. This could be for example community members, family members or co-workers. A similar factor is presented as "*subjective norm*" in TRA and TAM2. All of the four moderating factors – gender, age, experience and voluntariness of use – are seen to have a connection to social influence: women and older individuals seem to be more susceptible to social pressure when forming an intention to utilize a technology, and the more experience someone has the less they care about social influence when forming an intention to utilize technology applications. Voluntariness had the strongest effect on behavioral intention, which is logical, since if for example a tool is required to be used in a work environment, and someone refuses to use it, they will quickly become ostracized. (Venkatesh et al., 2003)

The final factor of the four, facilitating conditions, refers to the organizational and technological resources that the user believes are available to them to support the technology use. As a distinction from the other three factors, facilitating conditions have a direct influence on use behavior, rather than behavior intention, according to the model. The factor was also present in MPCU and in TPB it is referred to as "*perceived behavioral control*". Facilitating conditions is moderated by experience and age, but in a way that more experienced, as well as older, users give more weight to it: more experienced users tend to find more ways to receive help and support in the use of the system, which in turn increases

the use intention in such users, because they know they can work the technology or system more flexibly and troubleshoot more freely. (Venkatesh et al., 2003)

2.8.2 UTAUT extensions

As is the case with many of the other technology acceptance models and theories, UTAUT has also been extended. Venkatesh, Thong and Xu formulated UTAUT2 that incorporated three new constructs into UTAUT. These constructs were hedonic motivation, price value and habit. The extension was formulated to be utilized particularly in a consumer use context. (Venkatesh et al., 2012)

Hedonic motivation was added as a factor because it has been proven in previous literature that the enjoyment one derives from utilizing technology plays a big role in its acceptance. Price value refers to trade off of benefits received while using said service and the monetary price one has to pay to utilize it – as is with buying products or services, this plays a large role in individuals' selection when it comes to accepting technology as well. An experience and habit -factor was also added to the model. Habit is defined as: "*the extent to which people tend to perform behaviors automatically because of learning*". (Venkatesh et al., 2012) The renewed UTAUT2 and the newly added factors, as well as the moderating factors, can be seen presented in figure 2.

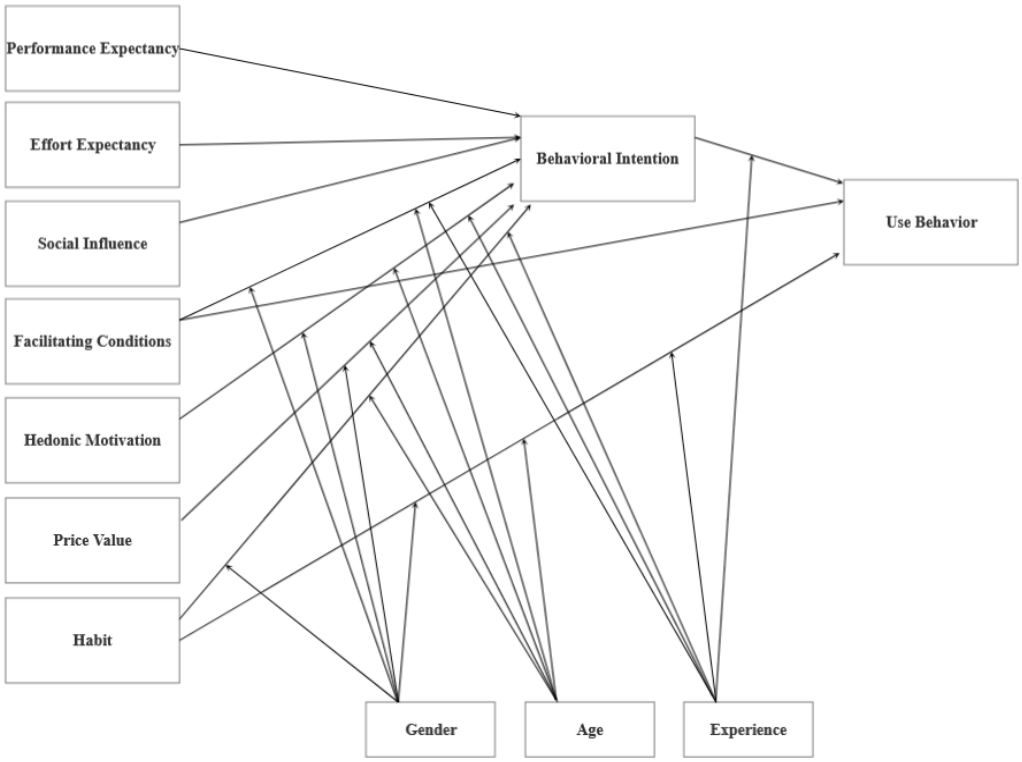

FIGURE 2: A visualization of the UTAUT2 model (Venkatesh et al., 2012)

Based on the literature review on TA models and theories, UTAUT – and partly its extension UTAUT2 - was selected as a base model for the purpose of this study, because of the fitting main factors and built-in moderating factors that can be observed when analyzing the data from the survey. UTAUT can also be easily modified by adding factors that could be relevant to the health dimension of the study. UTAUT has been stated as being applicable to the health technology context with some of these modifications (Hoque & Sorwar, 2017).

3 DIGITAL HEALTH

In the increasingly digitalized world of today, the health care field is also becoming increasingly digitalized and various different applications of digital health technology are utilized. The collection of health care applications that are made possible by information technology is called digital health (Värri, 2020). Digital health has also been described as "*the cultural transformation of how disruptive technologies that provide digital and objective data accessible to both caregivers and patients leads to an equal level doctor-patient relationship with shared decision-making and the democratization of care" (*Meskó et al., 2017) – so it is not only a technological phenomenon, but a cultural one.

In the following chapters relevant digital health definitions are presented and historical literature regarding the subject is covered. Digital health is an immensely large topic, so it is fitting to try and divide it into smaller, more palatable pieces. We will also discuss the subtypes of digital health that we chose to focus on in the study.

3.1 eHealth

One of the subsections of digital health is eHealth. The term has been originally used to specify the cross-section of research and business where medicinal informatics, public health and business collide. The term is therefore referring to a way, in which health services and health information is produced or improved via the internet and similar technologies. In addition to technological development and utilization of these technologies, the term has also been said to include a certain commitment to global thinking and an attitude where global health care can be improved by utilizing these technologies. (Eysenbach, 2001)

More recently, with technological advancements and applications, the concept of eHealth has also lived with the times. In addition to internet, also wearable and so-called mobile health (mHealth) technologies have been seen relevant to eHealth and by some definitions also remote appointment type solutions have

been seen as eHealth applications. There are however some disagreements over the definitions and more accurate definitions have been called after (Boogerd et al., 2015). Digital health and eHealth are therefore seen as containing many of the same elements, technologies and solutions depending on the interpretation. The common view is that digital health is an umbrella term that includes all of the different applications of information technology in the context of health care and health maintenance, as well as sub-sections of digital health such as eHealth, which is used more to refer to the process of improving individuals' health care with IT.

3.2 Mobile health

With the popularization of hand-held, mobile telephones and other devices in the past few decades, they were eventually integrated into various health care and health maintenance processes and utilized in them as well – the sector of digital health being coined mobile health or mHealth. These devices range from modern smart phones, like the iPhone, to personal digital assistants (PDA), such as the now old-fashioned seeming BlackBerry, to tablet PCs like the iPad. The devices have varying technical capabilities: some are capable of only traditional cellular communication like text messages and calls, while the more modern variants have options for internet access, video playback and support for external applications and software. (Free et al., 2013)

Mobile devices with their near constant reachability and large popularity are seen as very fitting to be used as tools for managing people's health via reminders to take their medicine, to steer away from smoking cigarettes or for example to measure their blood sugar levels (Free et al., 2013). In addition to the reachability and popularity, mobile technologies have become increasingly affordable even in low-income countries (Kannisto et al., 2014).

Even though one might think that the positive effects that a technology such as mHealth and the medical interventions it provides may be negligible, or it might have no effect on outcomes at all, studies have proven that even a simple technology, such as text messages, can be used to reach more positive outcomes. Gurol-Urganci and colleagues (2013) found that text message reminders had a positive effect on appointment attendance, another research paper (Vervloet et al., 2012) found that they could help patients take medication on time and a study by Horvath, Azman, Kennedy and Rutherford (2012) showed that the same applied to antiviral therapy. This goes to show that even a slight difference or advance in medical interventions could have a meaningful effect on the outcome, and the same could apply to further utilization of these remote appointment and virtual doctor services as well.

3.3 Remote health

Remote health has been seen as a discipline, which can be identified by the practitioners geographical, professional and often social isolation. The practitioners need to use public health knowledge, first aid skills and extensive clinical skills in their work. Utilizing these skills and various remote health systems together form the concept of remote health. (Wakerman, 2004)

More modern interpretations focus more on the technologies utilized when practicing remote health. These technologies are used to measure different bodily metrics from the patient and this data can be offered via internet and other technologies to health care professionals, who interpret the data and make decisions on care – even in real-time. Examples of these technological applications could be for example heart rate monitoring solutions, body temperature measuring sensors or breathing intensity measuring sensors. Individuals can also use the data for self-care or preventive measures themselves. (Majumder et al., 2017)

3.4 Digital health in the context of the study - Telemedicine

The type of digital health that we focus on in the study, which includes remote appointment and virtual doctor solutions, can be seen as a part of eHealth, remote health or even mHealth in the case of carrying out these sessions via mobile devices, but they have some apparent differences when it comes to the definitions. Possibly the most accurate sub-type of digital health would be telemedicine. The telemedicine term is used to refer to digital health services, in which treatment events or episodes are defined to be telemedicinal based on two factors: the nature of the interaction between the health care professional and the patient, and the information that is relayed in these events or episodes. The interaction can be saved in advance or for example in the case of a remote appointment via video call, they can also be real-time. The transferred information between the two parties can have many types, such as text, audio files, photos or video. (Craig & Petterson, 2005)

Telemedicine also entails different imaging systems and solutions in its definition in addition to the remote appointment style telemedicine. In these imaging solutions, clinical photographs can be integrated into the care process even if the provider, patient and other care parties are in completely different geographical locations: the pictures can be taken in one location, moved via IT to a second location to be reviewed, and be the basis of decision making regarding the care in a third location. This sort of utilization of technology, even though not always applicable, can bring immense flexibility and efficiency to the care process. (Mort et al., 2003)

In the case of this study, we will consider remote appointment and virtual doctor type digital health solutions to be a part of telemedicine. Some definitions might not agree, but there are some unsolved inconsistencies and overlaps

between the definitions, and these solutions do however fit the definitions formulated in the field's literature.

4 THEORETICAL BACKGROUND OF INCENTIVE USE IN THE CONTEXT OF TECHNOLOGY

The second part of the formulated research problem deals with ways to promote or incentivize use of these remote appointment or virtual doctor type services, so in order to gain insights into the subject this section covers existing theory related to incentive use in the context of technology. Two new theories are presented in addition to the already introduced SCT, their main points explained and some of the incentive types that they describe were further leveraged and utilized in the conducted survey study.

4.1 Self-Determination Theory (SDT)

The first of the theories that could be leveraged in formulating some potential incentives to encourage the use remote appointment and doctor digital health services is the Self-Determination Theory (*SDT)*. SDT posits that humans are generally active, aim for growth and strive for autonomy. According to SDT there are three fundamental psychological needs that humans try to fulfill: competence, autonomy and relatedness. The competence factor describes the human need to be capable and feel like they're effective at reaching their goals and carrying out actions. Autonomy on the other hand refers to the need of being in control of themselves and the decisions that they make. Relatedness is tied to the basic need of feeling connected and having a sense of belonging. (Deci & Ryan, 2000)

When formulating potential incentives for remote appointment and other digital health services, one incentive to increase use based on the competence factor is better instructions, better use support or a possibility to test or learn to use the service in a demo or training environment – if a user is more confident in their abilities beforehand or they can try something out in peace, it will increase the chance that they actually utilize the service for managing their health. A possibility to customize the user interface of the platform could also increase the feeling of being in control and autonomy.

Even though relatedness is a hard concept to formulate any incentives around, since health information and these sort of health platforms can be seen as private matters, there are ways to try and increase the relatedness that users experience. One example of this would be to leverage user experience and customer stories to create a sense of belonging and sharing the experience of using the service with other people. Hearing, reading and seeing stories about others benefitting or receiving faster or more cost-efficient health care via remote appointments or virtual doctor services could have the necessary positive influence to encourage new users to opt in.

4.2 Expectancy-Value Theory

According to the Expectancy-Value Theory (*EVT*) an individual's behavioral intention, or in this case usage intention, is determined by three factors: the expectancy of how the behavior will turn out, the value that the individual perceives that the behavior will create and the cost of the behavior. The expectancy entails beliefs about the individual's ability to carry out said behavior, and if they don't believe in their abilities to succeed, the motivation to carry out the behavior is low. Value portrays the significance that the individual places on the outcome of the behavior – if the significance is high, they are more likely to carry out the behavior. Cost is again the cost that is perceived by the individual: if the significance of the outcome outweigh the cost of engaging in the behavior, they are more likely to engage. (Wigfield & Cambria, 2010; Wigfield & Eccles, 2000)

So according to EVT if we want to influence a user's proclivity to use a digital health service such as a remote appointment solution, we can either focus on the perceived cost of using the service, the expectancy factor or the value factor. A user's expectancy could be influenced for example by making the user interface as logical and intuitive as possible, communicating the available user support clearly or launching reward programs to increase expectations of positive outcomes. The value factor is indirectly targeted via the expectations, but the cost factor could also be targeted via lowered costs for the user cumulative discounts for health services which are delivered via these digital platforms.

4.3 Leveraging social cognitive theory and extended technology acceptance model in incentive formation

As was presented in the earlier chapter covering theories about technology utilization and acceptance, SCT is the theory of individuals and their tendency to gather knowledge and behaviors from interactions with others as well as their own experiences (Bandura, 1986). So, to recap, individuals are more likely to use the digital health services, such as remote appointment services, if they are easy

to use, they gain a benefit from using the service, and are influenced by others using or otherwise endorsing said service. This could be turned into an incentive by - for example - simplifying user interfaces in the services or by providing faster or cheaper care with them.

As for the extended TAM, one of the factors influencing usage intention Tsai (2014) incorporated into their version of the model was institutional trust. As was mentioned in the earlier chapter, when talking about people's health, trust becomes a crucial factor. Trust has been associated with more satisfaction to treatment, less symptoms and a higher quality of life (Birkhäuer et al., 2017). Using this factor as an incentive to improve the acceptance and utilization level of digital health technologies such as remote appointments and virtual doctor services, the incentive could be for example more transparency on behalf of the service provider party on how patients' health information is being used.

5 RESEARCH METHODS

5.1 Research methodology

Since the UTAUT -model and many of the other models and theories that were selected to work as the theoretic framework for the research utilize different factors and moderating factors that affect the probability of utilization, a survey study was selected as the data collection method. The data received from the survey study was analyzed using quantitative methods – as was natural, considering that answers corresponding to different factors could be represented with numbers. The selected research method, data collection method and analysis is further described in the following chapters.

5.1.1 Research strategy

Research strategies - or approaches - can be roughly categorized into three different categories: qualitative, quantitative and mixed methods. Qualitative research refers to the fact that words are being used, and quantitative refers to numbers being used. Another way of looking at this is how data is being gathered: quantitative data is often gathered with instruments and qualitative data is gathered while observing a certain setting (Creswell & Creswell, 2017). If we perceive quantitative and qualitative research to be the two ends of a continuum, mixed methods research is positioned somewhere in between the two ends – utilizing data gathering methods from both categories. Even though an instrument can refer to an actual technical device measuring something, surveys can also be seen as instruments that are used to collect data (Lawrence, 2003). In this study quantitative research strategy was utilized.

5.1.2 Quantitative research

In addition to the description provided by Creswell and Creswell (2017) where the quantitative nature of a study was determined based on the way data was gathered, quantitative research can also be classified by the nature of the data itself. According to Goertzen (2017): "*quantitative research methods are concerned with collecting and analyzing data that is structured and can be represented numerically*". Goertzen goes on to state that, quantitative methods are particularly good when talking about a population or when trying to gain insight on why something is used or what the trend is regarding a phenomenon – which is exactly what this study is trying to achieve.

Because the foundation laid by UTAUT and other utilized models and theories enabled expressing the factors in a numerical format and previous research in the domain had already utilized quantitative methods, this approach was selected for this study as well. The quantitative approach included conducting a survey study and analyzing the gathered material via quantitative analysis methods, such as cross tabulation and logistic regression.

5.2 The survey

5.2.1 The sample

The target organization for the research and survey is a Finnish organization offering services related to electronic medical record (EMR) systems. The services include further development of systems, consulting as well as incident and service management. The organization wished to remain anonymous in the context of this study, but the personnel in the organization come from different professional backgrounds: social care, health care and IT, as well from very different age groups, so it was thought that the dataset would be interesting and potentially fairly descriptive of the population.

Because of a high degree of stress on the different departments in the organization and their employees as well as a very busy season, the target organization's representatives ruled that a link containing the survey could not be sent out via email to different departments or teams like originally planned, and it had to be instead posted on the organization's intranet to be available for respondents to reply when they had the chance. Ultimately, 81 respondents answered the survey. The organization employed 526 employees in 2022, so this would result in a response rate of 15,4% for the whole organization. Each of the different departments in the organization employ around 100 personnel, so if we would have been able to share the survey to our target department via email like originally planned, this roughly means that 81% of a single department responded to the survey – of course there is no guarantee that the response rate would have been that high via the email shared survey.

5.2.2 The survey form

The survey form was created mainly utilizing the factors – both main factors and moderating factors - from the UTAUT model. Because the domain we are researching is related to health, which has certain special characteristics when compared to other types of technology, extended TAM, HBM and other theories were also utilized when formulating the survey.

Since the organization that the survey study was being conducted was a Finnish one with mainly Finnish personnel, the survey was also formulated originally in Finnish. For the purposes of this thesis the survey was translated into English to have an easier time referencing specific questions. The translated, English version of the survey can be found in appendix 1 (APPENDIX 1) and the original Finnish survey form in appendix 2 (APPENDIX 2).

The formulated survey has a total of 18 questions. The first three deal with demographics information: age, gender and the level of education of the respondent. Age, gender and education level have all been established as having an effect on an individual's potential of technology adoption or use (Venkatesh et al., 2003; Venkatesh & Davis, 2000; Moore & Benbasat, 1996). The next fourteen questions covered earlier usage of remote appointments and other digital health technology, and they were formulated to correlate with the identified factors from UTAUT, TAM and other presented technology utilization theories.

The survey respondents were asked to assess, for example the ease of use of these digital health services, on a scale from one to ten – the same scale was used in all of the questions measuring factors in an ordinal scale. In addition to these questions that lead up to ordinal variables, some questions were added that lead up to dichotomous, or categorial, variables. The questions, factors on which the question was based on, and corresponding theories have been presented in table 1.

TABLE 1: Technology acceptance theory factors' correspondence with questions

Question	Factor or determinant	Theory
1, 2, 3: Demography information	age, gender, level of education	UTAUT, extended TAM, DOI
4, 5	effort expectancy, ease of use	UTAUT, TAM
6, 7	use behavior	UTAUT
8	performance expectancy, perceived benefits	UTAUT, extended TAM, HBM
9	Use behavior, performance expectancy, perceived benefits	UTAUT, extended TAM, HBM
10, 11	social influence	TRA, TAM, TPB, SCT, UTAUT
12, 13	facilitating conditions	TAM2, MPCU, UTAUT
14	hedonic motivation	UTAUT2
15	voluntariness of use	UTAUT
16, 17	institutional trust	extended TAM, HBM

The last page and the final question was reserved for collecting preference data from the respondents about potential incentives to promote the use of this sort of digital health technology. Respondents were asked to score the different incentive types on a scale of one through five. These questions were formulated based on the theories dealing with incentives that were presented in chapter 4. The literature included SDT, EVT, SCT and TAM theories. The theories and their linkage to incentives in question 18 is further visualized in table 2.

TABLE 2: Potential incentives and related theories

Incentive	Theory
Cost benefits, discounts	Expectance-Value Theory
Better instructions, support services or the possibility to test services	Social Cognitive Theory
Hearing user experiences from others, Customer Stories	Social Cognitive Theory Self-Determination Theory
Clearer information regarding the purposes and ways of using user and personal data	Extended Technology Acceptance Model by Tsai (2014)
Simpler user interfaces in services	Technology Acceptance Model
Reward programs, loyalty benefits	Expectance-Value Theory
The possibility to customize the user interfaces of the services to suit yourself	Self-Determination Theory

5.2.3 Analyzing the gathered material

The gathered material was analyzed using standard quantitative analysis methods. Dummy variables were created based on some of the dichotomous, or categorial, variables such as the sex of the respondent, two variables describing use behavior – both whether the respondents had used these remote appointment services in general and another one to measure whether they had used such a service during the past year – and one variable to measure whether they felt that they could fully utilize traditional health care services instead these modern services to gauge voluntariness of use experienced by the users. First the descriptive statistics were observed from the data, after that Spearman correlation was observed for the variables stemming from technology acceptance theory moderating factors - age and the level of education – and the other ordinal variables. Finally, binomial logistic regression was carried out on the data and the model was interpreted for factors affecting remote appointment and virtual doctor use behavior. All of the analysis was conducted with the help of statistics software, namely IBM's SPSS statistics software.

In order for a dataset to be suitable for binomial logistic regression, some assumptions need to be met. These assumptions are as follows:

(1) The dependent variable should be measured on a dichotomous scale.
(2) There must be one or more independent variables, which are either continuous or categorical.
(3) There should be independence of observations and the dependent variable should have mutually exclusive and exhaustive categories.
(4) There is a linear relationship between any independent variable and the logit of the dependent variable.
(5) There can't be largely influential outliers.

The first assumption is met since the dependent variable, whether a respondent has used remote appointment type services, is categorical and has only two categories. The independent variables are all either continuous or categorical, so the second assumption is also met. To make sure that the third assumption is met, two models will be run utilizing the different variables measuring the same factor. To make sure that the fourth and last assumption is met, the Box-Tidwell procedure was used to make sure that there indeed is a linear relationship between the continuous independent variables and the logit of the dependent variable. It is also stated that logistic regression strives with large sample sizes – which did come evident during the analysis. (Stoltzfus, 2011; Hosmer Jr et al., 2013)

Utilizing the Box-Tidwell procedure involves observing the interaction between continuous independent variables and their natural logarithm – if the terms are statistically significant, the assumption fails. All of the continuous

independent variables were transformed into new variables via the Box-Tidwell transformation by multiplying themselves with their natural logarithms and the new variables were titled with a prefix "Tr". Binary logistic regression was carried out for these transformed variables and the significance was observed. All of the independent variables were statistically non-significant, so it indicates that we have linearity of the logit and therefore the assumption is met, and we are able to utilize binary logistic regression. This is further visualized in the following table (TABLE 3).

TABLE 3: Significances of the Box-Tidwell transformed variables

							95 % C.I for EXP(B)	
	B	**S.E.**	**Wald**	**df**	**Sig.**	**Exp(B)**	**Lower**	**Upper**
TrAgeInYears	-0,006	,007	0,701	1	0,402	1,006	0,992	1,021
TrEffort1	,282	,132	4,532	1	0,033	0,754	0,582	0,978
TrEffort2	-,042	,079	0,285	1	0,593	1,043	0,893	1,219
TrPerfEx	,075	,116	0,418	1	0,518	0,928	0,740	1,164
TrSocInf1	-,042	,085	0,251	1	0,616	1,043	0,884	1,232
TrSocInf2	,010	,092	0,012	1	0,911	0,990	0,826	1,186
TrFacCond1	,049	,086	0,324	1	0,569	0,952	0,804	1,128
TrFacCond2	-,041	,102	0,166	1	0,684	1,042	0,854	1,272
TrHedonicMotivation	,041	,099	0,169	1	0,681	0,960	0,791	1,165
TrInstTrust1	,109	,098	1,232	1	0,267	0,897	0,740	1,087
TrInstTrust2	-,256	,122	4,403	1	0,036	1,292	1,017	1,640
TrEducationLevel	,013	,171	0,006	1	0,937	0,987	0,706	1,379
Constant	-1,335	2,594	0,265	1	0,607	3,801		

5.3 Assessment

5.3.1 Reliability

Reliability refers to the accuracy or quality of the measurements taken in a study. This means that for results to be reliable, the research should provide approximately the same results when replicated and shouldn't be reliant on the researcher. Three attributes of reliability have been established: homogeneity, stability and equivalence. Homogeneity measures the extent to which items on a scale measure a construct, stability the consistency of results in a repeated test scenario and equivalence the consistency of responses if the tested repeated by a different tester or a different form of an instrument. (Heale & Twycross, 2015)

As the methods and factors in UTAUT and UTAUT2 are well established in the field of technology acceptance, the reliability of using these methods to measure acceptance - and the factors' effect on it - should be reliable. Analyzing the data revealed however, that some of questions may have been formulated in a way that they were misunderstood by the respondents, and therefore may not measure what they were meant to measure accurately, affecting the homogeneity. Also, seeing that the survey was conducted in an organization that deals with health technology, the results may be biased towards a more favorable view on new technology and its acceptance. Literature shows that people that work in technology often hold more favorable views (Lupton, 2017). The forementioned factors affecting homogeneity and stability need to be taken into consideration when observing results of the analysis.

5.3.2 Validity

Validity describes the accuracy in which a concept is measured in a study. The concept of validity can be broken up into three parts: content validity, construct validity and criterion validity. Content validity represents the extent to which an instrument accurately measures every aspect of a particular construct, construct validity describes whether an instrument actually measures the wanted construct and criterion validity evaluates how accurately the study actually measures the outcome it is measuring. (Heale & Twycross, 2015) Validity can also be expressed as internal or external validity. Internal validity refers to how valid the study is in the population that is being studied – or how reliably the research questions are being answered - and external validity to how generalizable the findings or results are (Calder & Tybout, 1982).

The internal validity of the study can be considered generally to be good, since the survey questions were modelled according to factors in models such as UTAUT2, which are firmly established in theory and have been proven to be influencing factors in individuals' use behavior. The context of health in technology has not been so thoroughly researched and tested, but this was taken into consideration by including a question according to an extended TAM concept,

"institutional trust", which was deemed by Tsai (2014) to be a use behavior influencing factor.

The sample size is only 81, so fairly small, and the external validity is presumably low, so the results cannot be directly generalized to be true for a larger portion of the population. In addition to the small sample size, the organization that was studied is an organization that deals with digital health, the employees are more experienced with technology than the average citizen and might have biases towards technology and its implementations – including more favorable views towards these remote appointment and virtual doctor solutions.

6 ACCEPTENCE FACTORS IN REMOTE APPOINTMENT AND VIRTUAL DOCTOR TYPE DIGITAL HEALTH

6.1 Descriptive analysis of the collected dataset

The dataset that collected via the survey study shows that by age standards our target organization is a fairly typical technology organization. Personnel's ages range from 24 being youngest respondent to 63 being the oldest, and the mean being 41,87 years. Two respondents had opted to not reveal their age when answering the survey. The distribution is visualized in the next figure (FIGURE 3).

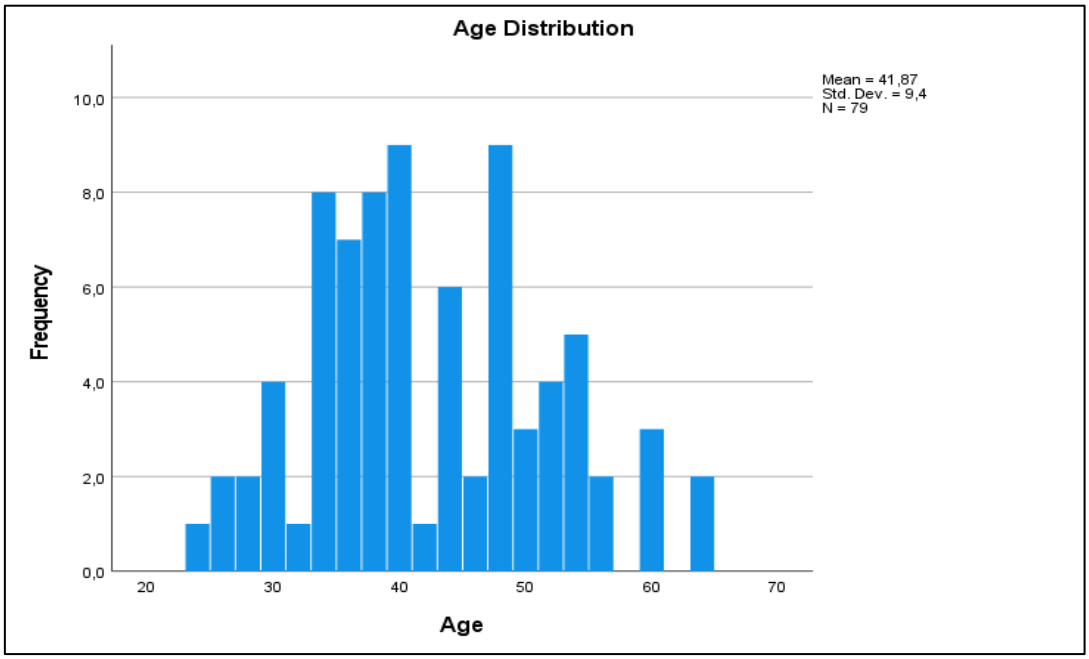

FIGURE 3: Age distribution of the respondents

This is similar to what the age distribution on average looks in tech companies in Finland with the mean being around 43 years of age, varying slightly depending on the particular field of technology (Teknologiateollisuus, 2020).

Unlike the age distribution, the gender distribution of the respondents of the dataset – or the target organization – does not represent the average tech organization in Finland. Out of the respondents 67,9% were women, 30,9% men and a single respondent in the "Other / Don't wish to disclose this information" -category – this case was omitted from the data to help with the later analysis. The distribution is presented in the following table (table 3). Over two thirds of the respondents being women is in stark contrast of the situation in the field in general and in an average tech company: in 2019 the ratio was 22% women and 78% men in the technology field. For specifically the IT field the number was slightly better: 27,7% of the workforce was composed of women and 72,3% of men. Our target organization is not perhaps the most traditional tech company with a lot of the employees being formerly from health care and social care and having switched fields later in their career.

TABLE 4: Gender distribution of the respondents

Gender	Frequency	Percent
Woman	55	67,9
Man	25	30,9
Other	1	1,2
Total	81	100,0

The level of education of the respondents is what you would expect from a technology organization working with health and social care themes. Employees in the target organization have some form of higher education on average – whether it is university degree of a lower degree, a university degree of a higher degree and a few respondents even having a licentiate or a doctoral degree. The higher and lower university degree holders make up the vast majority of the respondents with a cumulative percentage of 86,4%. The education levels of the respondents are further visualized in the figure below (FIGURE 4).

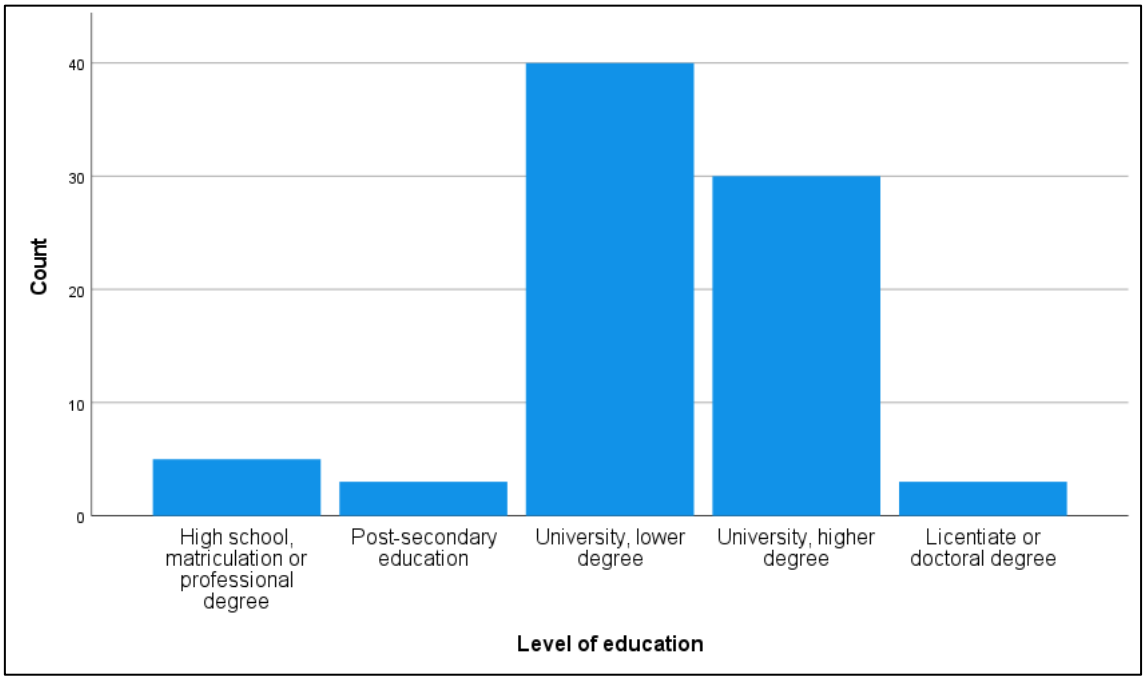

FIGURE 4: Levels of education in the respondent group

Education level itself hasn't been deemed a factor affecting technology acceptance directly, but it has been deemed as a strong predictor of computer self-efficacy (CSE) – the level of confidence an individual has in their computer use capabilities – in a study by Marakas and Johnson (1989), so it can be argued that is closely tied to performance expectancy and level of education is therefore an interesting attribute to observe for the respondent group.

What was striking, is that even though the target organization is a technology organization, which deals with similar solutions, a large portion of the respondents had not utilized remote appointment or virtual doctor services in an extent, that they had received a diagnosis, referral or prescription directly from the service – which was the measure for use behavior in the study. The distribution was 25% of respondents that hadn't utilized such services and 75% of respondents that in turn had utilized them. Even though the majority of respondents fell into the category that had exhibited use behavior, it is still of note that a quarter didn't exhibit use behavior, even though the target organization is a health technology organization, and one might imagine that almost everyone would have taken notice of this new way of handling one's health more flexibly. The distribution is presented in the following table (TABLE 5).

TABLE 5: Distribution of use behavior in the sample

	Frequency	Percent
Yes	60	75%
No	20	25%
Total	80	100%

As for the respondents that had reported to using these services, a large majority also reported using the services during the past year. It would seem logical that the users that have utilized said digital health services, would also utilize them fairly frequently having deemed them valuable in the upkeep of their health or simply finding them more flexible. As many as 53 out of the 60 that respondents that had utilized remote appointment or virtual doctor services in general, had also utilized them in the past year (table 6).

TABLE 6: Distribution of use behavior for the past year in the sample

		Frequency	Percent
Valid	**No**	7	8,8
	Yes	53	66,3
	Total	60	75,0
Missing	**System**	20	25,0
Total		80	100,0

When asked to estimate "How likely do you think you would use remote reception services if you could use them to take care of your health faster or better?" on a range of 1-10, the mean for the responses was 9,25 with the minimum value being 5 – meaning that overall, there is no large aversion towards these solutions in general, but there are a surprisingly large number of respondents that don't estimate the probability of their use to be very high, even if they receive faster or better care via them. This is further explored in the next table (TABLE 7).

TABLE 7: Respondent estimated likelihood of use behavior if technology is useful

Valid		Frequency	Percent	Cumulative percent
	5,00	3	3,8	3,8
	6,00	2	2,5	6,3
	7,00	2	2,5	8,8
	8,00	6	7,5	16,3
	9,00	19	23,8	40,0
	10,00	48	60,0	100,0
	Total	80	100,0	

6.2 Factors inhibiting use

6.2.1 Technology acceptance moderating factors and their observed effect

The moderating factors from the existing technology acceptance literature that were chosen for our survey and ultimately model were:

- age
- gender
- voluntariness of use
- level of education.

Level of education was chosen to be observed instead of the variant of habit in UTAUT2 by Venkatesh and colleagues (2012), as well as similar more modern theories, since it was thought that habit was hard to measure for such services that you might not form a habit for and only use when necessary. Gender is by nature categorical and not ordinal, and it was chosen to measure voluntariness of use as a binary variable, so correlation was analyzed between age and level of education, and the independent variables: effort expectancy, performance expectancy, social influence, facilitating conditions, hedonic motivation and institutional trust.

Looking at the correlation of age and effort expectancy, neither of the formulated variables correlate statistically significantly with age. The first variable – which was inverted in nature, meaning that a higher value denotes less effort - has a higher p-value when using Spearman's rho, but even that is merely ,163, so no statistical significance can be observed. The correlation coefficient is however observed to be negative, as it should be when going prior theory (Venkatesh et al., 2003; Venkatesh et al., 2012): as age increases, so does the effort users expect the use of said technology to require – or in this case the ease of use goes down (TABLE 8).

TABLE 8: Spearman's rho for Age and Ease of use

Spearman's rho			**Age in years**	**Ease of use**
	Age in years	Correlation Coefficient	1,000	-0,160
		Sig. (2-tailed)		,163
		N	78	78
	Ease of use	Correlation Coefficient	-0,160	1,000
		Sig. (2-tailed)	0,163	
		N	78	80

The same can be observed for performance expectancy and age. There is a similar negative correlation coefficient, as is stated to be the case in literature, but

the significance is again too low for a statistical significance to be stated: respondents' performance expectancy seems to go down as the age increases (TABLE 9). The p-value for this correlation observation is even higher than the previous one at ,301.

TABLE 9: Spearman's rho for age and performance expectancy

Spearman's rho			**Age in years**	**Performance expectancy**
	Age in years	Correlation Coefficient	1,000	-0,119
		Sig. (2-tailed)		,301
		N	78	78
	Performance expectancy	Correlation Coefficient	-0,119	1,000
		Sig. (2-tailed)	,301	
		N	78	80

The same trend repeats for the other technology acceptance variables and their correlation with age as well: the correlation coefficient does exist and its direction is consistent of that in the literature, but the 2-tailed significance is still non-significant, larger than .005, for each of them. The ones that seem most noteworthy are the correlation between age and the first facilitating conditions variable as well as the correlation between age and the first social influence variable.

The correlation between facilitating conditions and age is observed as one would expect. As age increases, the support one feels that is available to them in order to use the technology decreases. But as stated, the p-value, so the probability that age has no effect on facilitating conditions, is as much as ,168. For social influence and age, the correlation coefficient is at 0,144, so one unit increase in age means 0,144 unit increase in how much the respondent feels that their remote appointment use is affected by the opinions of their social circle. As with the other moderating factors, the significance is fairly low at ,207. Spearman's rho correlation for facilitating conditions has been presented in table 10 and for social influence in table 11.

TABLE 10: Spearman's rho for age and the facilitating conditions variable

Spearman's rho			**Age in years**	**Facilitating conditions**
	Age in years	Correlation Coefficient	1,000	-0,158
		Sig. (2-tailed)		,168
		N	78	78
	Facilitating conditions	Correlation Coefficient	-0,158	1,000
		Sig. (2-tailed)	,168	
		N	78	80

TABLE 11: Spearman's rho for age and the social influence variable

Spearman's rho			**Age in years**	**Social influence**
	Age in years	Correlation Coefficient	1,000	0,144
		Sig. (2-tailed)		,207
		N	78	78
	Social influence	Correlation Coefficient	0,144	1,000
		Sig. (2-tailed)	,207	
		N	78	80

Regarding the correlation of education level and the technology acceptance factor-based variables, the correlation and the significances were even worse. An outlier was identified in the data where all of the three most highly educated respondents had responded very negatively and seemingly randomly to many of the questions. The outliers were removed from the set being observed, but it didn't do much to better the significance of the findings from the dataset, so they were ultimately included in the correlation analysis. The most significant correlation was observed for the second effort expectancy variable and the second social influence variable.

The second effort expectancy measured the estimated effort of effective remote appointment use, and the second social influence variable measured the social acceptance of these remote appointment technologies in the respondents' social circles. Both of the observations seem logical. With a higher education, and maybe a better knowledge of these technologies, may also come an understanding of the potential of them - if a new technology has a lot of potential to it, its effective use also requires more effort to fully capitalize on that potential. As for the social influence variable, it is also logical that if the education level rises, the perceived acceptance for new technologies in one's social circle rises as well. The correlation coefficients and significances for effort expectancy and social influence are presented in table 12 and table 13 respectively.

TABLE 12: Spearman's rho for education level and the effort expectancy 2 variable

Spearman's rho			**Level of education**	**Effort expectancy 2**
	Level of education	Correlation Coefficient	1,000	,171
		Sig. (2-tailed)		,129
		N	80	80
	Effort expectancy 2	Correlation Coefficient	,171	1,000
		Sig. (2-tailed)	,129	
		N	80	80

TABLE 13: Spearman's rho for education level and the social influence 2 variable

Spearman's rho			**Level of education**	**Social influence 2**
	Level of education	Correlation Coefficient	1,000	,149
		Sig. (2-tailed)		,187
		N	80	80
	Social Influence 2	Correlation Coefficient	,149	1,000
		Sig. (2-tailed)	,187	
		N	80	80

6.2.2 Applying logistic regression to find possible inhibitors of remote appointment utilization

Because one of the logistic regression assumptions is that there can only be one variable measuring one factor in the model, two models were run to meet this requirement and to also find the one that best predicts the outcome of remote appointment use behavior. In the first model one variable measuring a factor is utilized and in the second one another for the duplicate variable.

The first model that was run was good at predicting outcomes where a respondent had utilized remote appointment services, but not so effective at predicting the cases where the outcome was a non-use behavior. Percentage for correct predictions for use behavior was 96,7% and 50,0% for non-use behavior and a total accuracy of 85,9% – this is presented in table 14. The model being able to predict fairly accurately which factors enable use rather than inhibit it isn't of course what was the focus of the study.

As for the model fit, Cox and Snell R-squared for the model was ,227 signifying a model fit that is not very good. model fitness indicator, Nagelkerke R-squared, how much of the variance in outcomes the model predicts. Nagelkerke R-squared was measured at ,344 – so only 34,4% of the variance would be explained by the model.

TABLE 14: The first model's predictions

Observed		**Predicted**		**Percentage correct**
		Use behavior		
Use behavior		**Did use**	**Didn't use**	
	Did use	58	2	96,7
	Didn't use	9	9	50,0
Overall percentage				85,9

In the model itself individual variables are again seen as very statistically insignificant as was the case with the correlation between technology acceptance covariants and factors. Not a single p-value is even close to being seen as statistically significant. It can however be seen by the odds ratio, Exp(B), that the factors that contribute towards not using remote appointment services according to this model and data set are age, level of education, social influence and institutional trust. For these variables the odds ratio was less than 1,00. Judging by the model, a unit increase in age would lower the odds of use by 3,1%, in level of education for 14,8%, in social influence by 4,9% and in institutional trust by 14,9%. This observation is fairly non-sensical for education level and institutional trust, since it is the opposite of what prior research says, but the effect for social influence and age is backed by literature. The variables in the model, odds ratios and significance are presented in table 15.

TABLE 15: The first logistic regression model's variables, significances and odds ratios

							95 % C.I for EXP(B)	
	B	**S.E.**	**Wald**	**df**	**Sig.**	**Exp(B)**	**Lower**	**Upper**
Age in years	-0,032	0,034	0,902	1	0,342	0,969	0,907	1,035
Gender(1)	1,126	0,681	2,732	1	0,098	3,085	0,811	11,728
Level of education	-0,160	0,451	0,126	1	0,723	0,852	0,352	2,062
Ease of use	0,623	0,334	3,487	1	0,062	1,865	0,970	3,586
Performance expectancy	0,008	0,313	0,001	1	0,980	1,008	0,546	1,860
Social influence 1	-0,050	0,188	0,071	1	0,791	0,951	0,658	1,375
Facilitating conditions 1	0,045	0,208	0,047	1	0,828	1,046	0,696	1,572
Hedonic motivation	0,056	0,273	0,042	1	0,837	1,058	0,619	1,808
Voluntariness of use(1)	0,319	0,810	0,155	1	0,694	1,376	0,281	6,733
Institutional trust 1	-0,162	0,228	0,503	1	0,478	0,851	0,544	1,330
Constant	-1,519	3,478	0,191	1	0,662	0,219		

Like explained earlier, in the second model, the first of the variables expressing the same factor were replaced by the second ones. The swapping involved switching ease of use with effort expectancy, as well as swapping the social influence, facilitating conditions and institutional trust variables to the secondary options. The secondary model was also deemed a bad fit with a Cox and Snell R-squared of ,191 and a Nagelkerke R-squared of ,289. The second model also had a worse capability to predict the outcomes with a 95% correct percentage for use behavior, a 38,9% correct percentage for non-use behavior and an 82,1 general correct percentage – this is visible from table 16.

TABLE 16: The second model's predictions

Observed		Predicted		Percentage correct
		Use behavior		
Use behavior		Did use	Didn't use	
	Did use	57	3	95,0
	Didn't use	11	7	38,9
Overall percentage				82,1

TABLE 17: The second logistic regression model's variables, significances and odds ratios

							95 % C.I for EXP(B)	
	B	S.E.	Wald	df	Sig.	Exp(B)	Lower	Upper
Age in years	-0,048	0,033	2,163	1	0,141	0,953	0,894	1,016
Gender(1)	1,025	0,680	2,276	1	0,131	2,787	0,736	10,559
Level of education	0,032	0,409	0,006	1	0,938	1,032	0,463	2,302
Effort expectancy	-0,175	0,194	0,816	1	0,366	0,839	0,574	1,227
Performance expectancy	0,277	0,295	0,878	1	0,349	1,319	0,739	2,351
Social influence 2	0,067	0,247	0,073	1	0,787	1,069	0,659	1,733
Facilitating conditions 2	0,146	0,226	0,420	1	0,517	1,158	0,744	1,803
Hedonic motivation	0,215	0,274	0,614	1	0,433	1,240	0,724	2,122
Voluntariness of use(1)	0,047	0,745	0,004	1	0,950	1,048	0,243	4,517
Institutional trust 2	-0,299	0,244	1,499	1	0,221	0,742	0,460	1,197
Constant	0,213	3,149	0,005	1	0,946	1,237		

The second model itself doesn't bring any interesting new insight into what could work as inhibiting factors when it comes to remote technology use and as was the case with the first model, the significance of individual factors is deemed small again – even though on average slightly better than in the first model. Effort expectancy was identified to be a factor lowering use behavior odds by 16,1% for every unit increase, which was consistent with the literature. Again, the institutional trust factor is also seen as a variable which's increase lowers observed use behavior odds by quite a large margin 25,8%. This is an observation that is in contrast to the literature and general logic and might have something to do with unsuccessful survey question formatting or some other factor within the respondent group. The second model, it's variables, significances and odds ratios are presented in table 17.

Ease of use had the highest odds ratio of 1,865 out of all of the factors between the two models when leaving out the binary variables, performance expectancy the second highest of 1,319 and hedonic motivation the third highest of

1,240. The variables that could be observed to lower the odds of use behavior's occurrence when increased were age, effort expectancy, level of education and institutional trust. Like already briefly discussed earlier, level of education and institutional trust don't seem logical to work in such a way. Perhaps the respondents interpreted the institutional trust related questions in a different way that was intended or maybe they felt that health care organizations or governmental entities are somehow completely detached from these remote appointment services. Age and effort expectancy are however in line with the literature and would seem like logical reasons for not utilizing these services – if something seems hard and confusing to use, you probably aren't very keen on using it, no matter how much benefit you could gain from it.

All in all, neither of the logistic regression models were a good fit and all of the significances were statistically non-significant, so no great conclusions can be made from the data. Nevertheless, it was the observations from this particular group of respondents that work in health technology and are from a non-typical technology organization. The findings, even though contradictory to the existing literature, may provide some insight on what to focus on, if we want to increase utilization rate or further examine the reasons for non-utilization of these remote appointment solutions.

6.3 Potential ways to incentivize use

The second part of the survey asked the respondents to rate different incentives on how likely they would increase remote appointment and virtual doctor utilization for them. The incentives were:

- cost benefits, discounts
- better instructions, support services or the possibility to test services
- hearing user experiences from others, customer stories
- clearer information regarding the purposes and ways of using user and personal data
- simpler user interfaces in the services
- reward programs, loyalty benefits
- the possibility to customize the user interfaces of the services to suit yourself.

By far the most popular options was cost benefits and discounts reaching a mean answer of 4,46 out of the provided 1-5 range. This comes as no surprise since price is a determining factor for many when it comes to services or products. The second and third most popular choices were simpler user interfaces and better instructions and support for use with answer means of 3,95 and 3,65 respectively. The distribution is visualized in the following figure (FIGURE 5). Not far behind

was better customization options with a mean of 3,56. This finding is consistent with the observations from the logistic regression where ease of use, performance expectancy and hedonic motivation were found to have the largest odds ratios out of the positive effects and effort expectancy and age out of the negative effects.

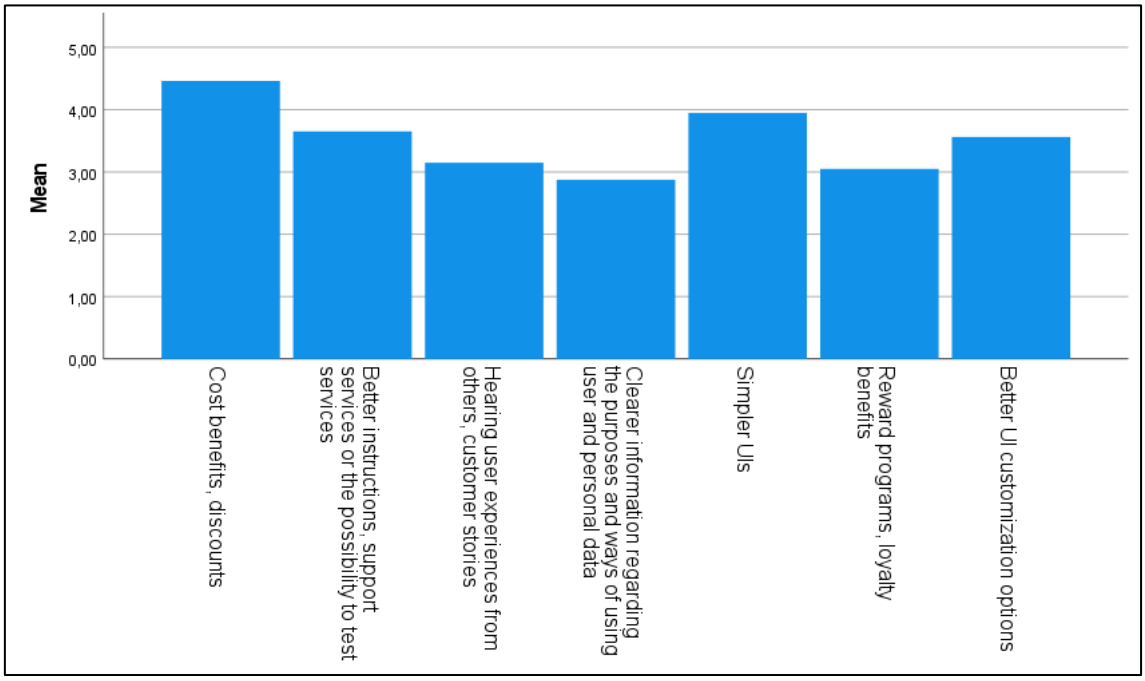

FIGURE 5: Visualized means for the incentive options

User stories, better and more transparent personal data usage information and reward programs were not as popular selections for the respondents. User stories and reward programs are not that surprising, since health care might be seen as a personal issue and people are not interested in hearing other people's experiences regarding it. Reward programs also might feel like a commitment to a certain service provider, and therefore a choice that users don't want to make when it comes to their health care. The personal data option however wasn't necessarily expected. There has been a lot of discussion around personal health information and other personal data utilization and the potentially not so ideal ways some parties are going about it, so it would have been logical that people would give it more weight. It could be that respondents who are already in touch with this sort of technology understand that a lot of the data is utilized, it is necessary to provide better quality care and have seem well working processes, so they are not that scared of wary of it.

7 CONCLUSIONS

The study of technology acceptance has long been an interest of researchers and a theme that has captivated both academia and parties trying to harness the knowledge for business uses. Different theories and models largely have the same base in literature, particularly psychology and sociology (Ajzen, 1991; Venkatesh et al., 2003). Yet researchers have had unique approaches to subject matter and formulated differing answers to the question: what affects people's technology acceptance? Unlike many of the existing literature, this thesis was meant to shed light on specifically technology acceptance and usage when it comes to health technology, and even more specifically, remote appointment and virtual doctor solutions.

A theory explaining the factors effecting individuals' technology acceptance, UTAUT and its extension UTAUT2 by Venkatesh and colleagues (2003; 2013) was utilized as the primary theoretical background for the thesis, but other technology acceptance models were also considered and leveraged where deemed appropriate. One of the more influential ones to the thesis was the model by Tsai (2014) where TAM and HBM were fused to provide a more fitting model to be utilized in a telehealth context.

The main factors ultimately leading to technology use behavior, according to UTAUT, are performance expectancy, effort expectancy, social influence and facilitating conditions. The moderating factors that were seen to influence the effect of these main factors are gender, age, experience and voluntariness of use (Venkatesh et al., 2003). The later extension, UTAUT2, expands on the existing theory by adding three more main factors: hedonic motivation, price value and habit, as well as removing voluntariness of use from the moderating factors (Venkatesh et al., 2012). The third utilized model was the infusion of an extended TAM and the health belief model formulated by Tsai (2014). The extended TAM was originally formulated by Davis (1989) and the model includes the factors: social trust, institutional trust, perceived ease of use and perceived usefulness. Because in this thesis the focus was on remote appointment services, it was evaluated that habit was something the users would have a hard time estimating their habit for services that they may have used only once or not at all, so it was omitted from

the factors. The same was done for price value, since the underlying idea was that the technology should be utilized more effectively in public health care, where the price value factor – and especially the user's estimation of it - doesn't really make that much sense. Out of the TAM and HBM integrated model only institutional trust was utilized as a factor because it was felt that the perceived trust in the institutions providing these services as well as the solutions themselves would be relevant for the outcome.

There are a few reasons why our study differs from the ones in the literature and may not be compatible with the theories and models it was based on. First, the UTAUT theory was formulated in an organizational context, which can be seen from a factor like voluntariness of use. Despite this voluntariness of use was selected as one of the factors in the utilized model to try and measure whether users feel that it is necessary to use these new technologies for health upkeep or can they rely solely on the traditional methods of face-to-face healthcare. When utilizing the model to try and explain the behavior of individuals in a setting that is not in an organizational context – like using remote appointment services for health upkeep on their private time – issues may arise and some of the established effects may not apply. A second reason is that none of the established models was adopted and utilized outright, but like explained, certain modifications were done with the expectation that they would make the resulting model fit the context and study better – it is completely possible that opposite of what was pursued was achieved. A third reason is that even though the theories have been established as being universal and being able to predict reasons for technology usage, the context of health care may bring forth some underlying factors that have not been considered. The literature for these technology acceptance theories and models in the context of health care, and especially trusting these remote solutions, is fairly scarce.

Another aspect that takes away from the findings is the problems with conducting the survey. The original plan was to distribute the survey to larger group of people to achieve a larger sample and enable a more accurate analysis, but events in the target organization lead to it only being distributed via their intranet and even there for a shorter period of time that was optimal, resulting in the small sample size of 81 – a sample size this small brings obvious challenges to conducting quantitative analysis on the data. While analyzing the data, some of it also pointed towards some problems in the survey question formulation – some of the questions may have been ambiguous or hard to understand for the respondents. The respondent group may also have certain biases towards these new technologies because of their background and because of that the utilization rate can be higher than in the population on average (Lupton, 2017). The group also is probably not the part of population that is creating a lot of strain on health care organizations because of the fairly low mean age, so steering them towards these services may not be very useful from the resource saving point of view. Research should rather focus on the elderly, or people that are in a lower socio-economic position, because that is the group that doesn't utilize said services (Lupton, 2017).

Even though there might be some issues regarding the reliability and validity of the study and the results, and the existing technology acceptance models may not have been utilized to their full potential, we still uncovered some insights from the dataset. Even in a technology organization, a quarter of the employees had not utilized these sorts of services at all, so there must still be some obstacles for acceptance and adoption – maybe even more so for the general public that may not be technologically savvy on average. Almost a fifth of the respondents also didn't think it entirely sure whether they would utilize these services, even though they would receive better or faster care via them, so this points in the direction of usability, support and cost factors. This deduction is supported by the findings of our logistic regression analysis and the descriptive analysis for the incentives: the factors that were deemed to have most positive effect on observed use behavior were ease of use, performance expectancy and hedonic motivation, where as age and effort expectancy were observed to have negative effects. The most popular choices for incentives that could increase use in the respondent group were cost benefits, simpler user interfaces and better support for use. Providing accessible and customizable remote appointment solutions and leveraging discounts for using them could be the key to increase use.

As stated earlier, no broad conclusions can be made because of the problems with the data set and the methods, but the results could provide a guidepost on where to focus future research when it comes to remote health, and more broadly digital health, acceptance research in the future. Existing technology acceptance models have been established strongly in the literature, but new technologies, new solutions and changes in societies may bring forth aspects that they have not taken into account.

8 SUMMARY

The goal of this thesis was to try and find insights on why remote appointment and virtual doctor type digital health services aren't necessarily utilized to their full potential and what ways there are to maybe increase the utilization rate to help with the looming resource trouble in health care. In order to gain insights on how to approach the issue, existing literature and theories were presented regarding technology acceptance and theory regarding digital health was presented to understand how it is applicable in this context.

Ultimately two technology acceptance theories, UTAUT and TAM, as well as their extensions were chosen to work as a theoretical background. From these theories age, gender and voluntariness of use were chosen to work as moderating factors and effort expectancy, performance expectancy, social influence, facilitating conditions, hedonic motivation and institutional trust as main factors. A survey study was conducted, and the resulting data was analyzed via descriptive methods and logistic regression to answer the first research problem:

> *What are the reasons for individuals to avoid using remote appointment and virtual doctor type digital healthcare services?*

The results, even though not conclusive, were that effort expectancy and age were the factors effecting the odds of use in the most negative way, and on the other hand, ease of use, performance expectancy and hedonic motivation effecting the odds of use in the most positive way. The findings would indicate that existing solutions could be seen as hard to use and maybe not accessible for the more elderly population, and that effective solutions which are enjoyable and easier to use would see more utilization. The findings should however be considered not entirely reliable because of the issues with the sample size and question formatting.

In addition to trying to find answers to why remote appointment and virtual doctor services are not utilized to their full potential, the study also aimed at uncovering ways to further incentivize the utilization of these services and find an answer the second research problem:

Are there any incentives that could be used to encourage individuals to utilize these services?

It was found that the incentives preferred by the studied group fit together well with the reasons for non-utilization of remote appointment services. The best performing potential incentives in the studied group were cost benefits, better support and instructions for service use, and the possibility to customize their user interfaces to better fit their preferences - user experience and accessibility is highlighted once more.

The study provides some direction on what possible reasons there are for low remote appointment and remote health acceptance as well as potential ways to increase use. The generalizability and reliability of the study are however questionable due to the nature of the studied group, the low sample size and the potential issues with the survey formatting. Future research could focus on a particular group that are already known to be non-utilizers and make sure that the studied group has a high enough commitment level in order to generate more meaningful results.

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APPENDIX 1 SURVEY FORM TRANSLATED TO ENGLISH

Acceptance of remote appointment and virtual doctor services

Demographic Information

1. Age

Age in years _____

2. Gender

- ◯ Male
- ◯ Female
- ◯ Other / I don't wish to disclose this information

3. Education

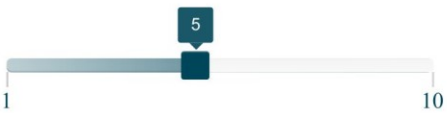
Select the highest achieved

- ◯ Less than primary school or equivalent
- ◯ Primary school (classes 1-6), kansakoulu
- ◯ Secondary school (classes 7-9/10), middle school
- ◯ High school, matriculation or professional degree
- ◯ Post-secondary education
- ◯ University, lower degree
- ◯ University, higher degree
- ◯ Licentiate or doctoral degree

Relationship with technology and digital health services

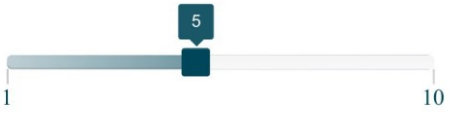
4. How easy do you find using remote appointment services?

1 = very difficult, 10 = very easy



5. How much effort would you estimate the effective use of digital health services requires?

1 =little, 10 = a lot



6. Have you used a remote appointment or virtual reception service from which you have directly received a diagnosis, referral or prescription?

For example, remote reception, virtual doctor, etc.

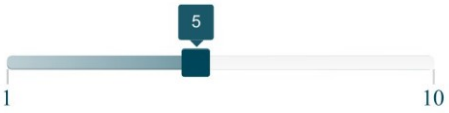
- ◯ Yes
- ◯ No

7. Have you used the digital health service described in the previous question in the last year?

- ◯ Yes
- ◯ No

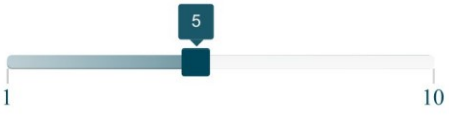
8. Rate how likely you think remote and virtual reception applications are useful in maintaining or treating your health

1 = unlikely, 10 = likely



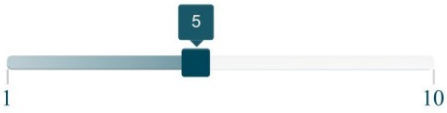
9. How likely do you think you would use remote reception services if you could use them to take care of your health faster or better?

1 = epätodennäköisesti, 10 = todennäköisesti



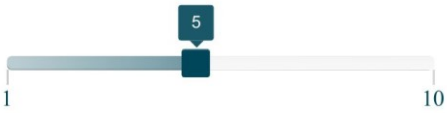
10. Assess how much the opinions of others - for example your friends, family or colleagues - influence your decision to use remote reception or other digital health services

1 = not at all, 10 = a lot



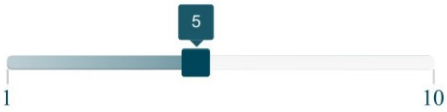
11. How socially accepted do you feel the use of remote reception services is in your own social circle or community?

1 = not accepted, 10 = totally accepted



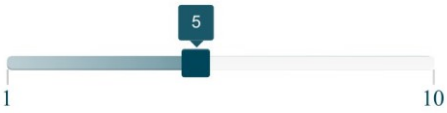
12. Assess the availability of support for using remote reception services (For example, instructions, the possibility to test the services, etc.)

1 = very poor, 10 = very good



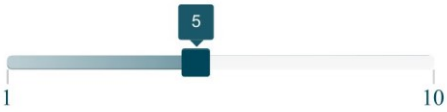
13. How accessible do you think remote reception and other digital health services are?

1 = not accessible, 10 = easily accessible



14. How pleasant do you think the use of remote reception, remote visits and other digital health services is?

1 = unpleasing, 10 = pleasing



15. Do you feel that when looking after your health, you can, if you wish, not use remote reception-type services and use traditional services instead?

◯ Yes

◯ No

16. How reliable do you consider health and medical care organizations?

1 = very unreliable, 10 = extremely reliable

17. Evaluate how much you trust that your personal and health data will be processed in an appropriate manner when using remote reception services

1 = low trust, 10 = high trust

Means and incentives for increasing the utilization rate

18. Estimate how likely you think the following factors would increase your own use of remote reception services

1 = unlikely, 5 = likely

	1	2	3	4	5
Cost benefits, discounts	◯	◯	◯	◯	◯
Better instructions, support services or the possibility to test services	◯	◯	◯	◯	◯
Hearing user experiences from others, Customer Stories	◯	◯	◯	◯	◯

	1	2	3	4	5
Clearer information regarding the purposes and ways of using user and personal data	○	○	○	○	○
Simpler user interfaces in services	○	○	○	○	○
Reward programs, loyalty benefits	○	○	○	○	○
The possibility to customize the user interfaces of the services to suit yourself	○	○	○	○	○

APPENDIX 2 ORIGINAL FINNISH SURVEY FORM

Etä- ja virtuaalivastaanotto -tyyppisten digitaalisten terveyspalveluiden hyväksyntä

Demografiatiedot

1. Ikä

Ikä vuosina _____

2. Sukupuolesi

- ◯ Mies
- ◯ Nainen
- ◯ Muu / En halua kertoa

3. Koulutustaso

Valitse korkein saavutettu

- ◯ Vähemmän kuin peruskoulun ala-aste tai vastaava
- ◯ Peruskoulun ala-aste (1-6 luokat), kansakoulu
- ◯ Peruskoulun yläaste (7-9/10 luokat), keskikoulu
- ◯ Lukio, ylioppilas- tai ammatillinen tutkinto
- ◯ Opistotutkinto
- ◯ Korkeakoulu, alemman asteen tutkinto
- ◯ Korkeakoulu, ylemmän asteen tutkinto
- ◯ Lisensiaatin tai tohtorin tutkinto

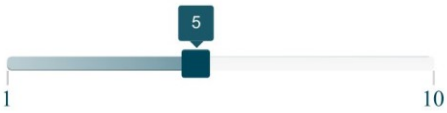
Suhde teknologiaan ja digitaalisiin terveyspalveluihin

4. Kuinka helpoksi koet etävastaanottopalveluiden käytön?

1 = hyvin vaikeaa, 10 = erittäin helppoa

5. Kuinka paljon vaivaa arvioisit digitaalisten terveyspalveluiden tehokkaan käytön vaativan?

1 =vähän, 10 = paljon



6. Oletko käyttänyt etä- tai virtuaalivastaanottopalvelua, joista olet saanut suoraan diagnoosin, lähetteen tai reseptin?

Esimerkiksi etävastaanotto, virtuaalilääkäri tms.

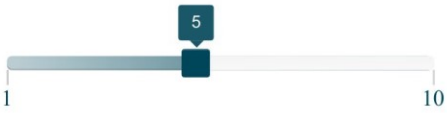
- ◯ Kyllä
- ◯ En

7. Oletko käyttänyt edellisessä kysymyksessä kuvailtua digitaalista terveyspalvelua viimeisen vuoden aikana?

- ◯ Kyllä
- ◯ En

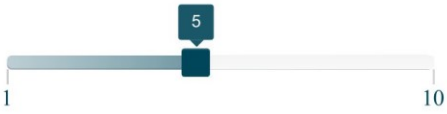
8. Arvioi kuinka todennäköisenä pidät, että etä- ja virtuaalivastaanottosovellukset ovat hyödyllisiä terveytesi ylläpidossa tai hoidossa

(1 = epätodennäköisesti, 10 = todennäköisesti)



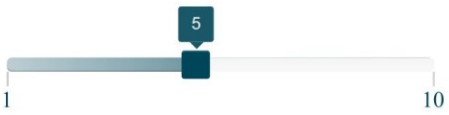
9. Kuinka todennäköisesti uskot käyttäväsi etävastaanottopalveluita, jos saat niiden avulla hoidettua terveyttäsi nopeammin tai paremmin?

(1 = epätodennäköisesti, 10 = todennäköisesti)



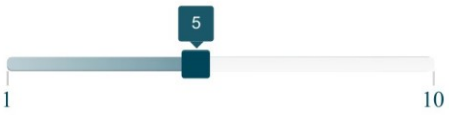
10. Arvioi kuinka paljon muiden - esimerkiksi ystäväsi, perheesi tai kollegoiden - mielipiteet vaikuttavat päätökseesi käyttää etävastaanotto- tai muita digitaalisia terveyspalveluita

1 = ei ollenkaan, 10 = paljon



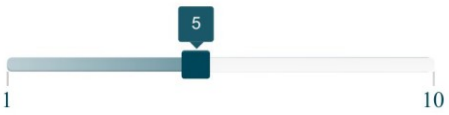
11. Kuinka sosiaalisesti hyväksyttyttyä koet etävastaanottopalveluiden käytön olevan omassa sosiaalisessa piirissäsi tai yhteisössäsi?

1 = ei hyväksyttyä, 10 = hyväksyttyä



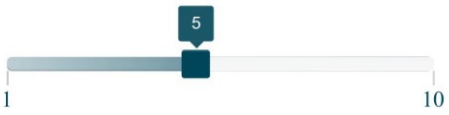
12. Arvioi etävastaanottopalveluiden käyttämiseen tarkoitetun tuen saatavuutta (Esimerkiksi ohjeet, mahdollisuus testata palvelua jne.)

1 = huono, 10 = hyvä



13. Kuinka helposti saavutettavissa etävastaanotto- ja muut digitaaliset terveyspalvelut ovat mielestäsi?

1 = vaikeasti saavutettavissa, 10 = helposti saavutettavissa



14. Kuinka miellyttänä kokemuksena pidät etävastaanotto-, etäkäynti- ja muiden digitaalisten terveyspalveluiden käyttöä?

1 = epämiellyttävänä, 10 = miellyttävänä

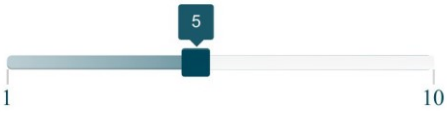
15. Koetko, että voit terveyttäsi hoitaessa halutessasi jättää etävastaanottotyyppiset palvelut käyttämättä ja hyödyntää niiden sijaan perinteisiä palveluja?

◯ Kyllä

◯ En

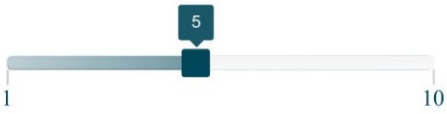
16. Kuinka luotettavina pidät terveyden- ja sairaanhoito-organisaatioita?

1 = erittäin epäluotettavina, 10 = erittäin luotettavina



17. Arvioi kuinka paljon luotat, että henkilö- ja terveystietojasi käsitellään asianmukaisella tavalla etävastaanottopalveluita käyttäessäsi

1 = heikko luotto, 10 = vahva luotto



Käyttöasteen nostamisen keinot ja kannustimet

18. Arvioi kuinka todennäköisenä pidät, että seuraavat tekijät lisäisivät omaa etävastaanottopalveluiden käyttöäsi

1 = epätodennäköistä, 5 = todennäköistä

	1	2	3	4	5
Kustannusedut, alennukset	◯	◯	◯	◯	◯
Paremmat ohjeet, tukipalvelut tai mahdollisuus testata palveluita	◯	◯	◯	◯	◯

	1	2	3	4	5
Käyttäjäkokemuksien kuuleminen muilta, asiakastarinat	○	○	○	○	○
Selkeämpi tiedotus liittyen käyttäjä- ja henkilötietojen käyttötarkoituksiin sekä -tapoihin	○	○	○	○	○
Yksinkertaisemmat käyttöliittymät palveluissa	○	○	○	○	○
Palkitsemisohjelmat, kanta-asiakkuusedut	○	○	○	○	○
Mahdollisuus muokata palveluiden käyttöliittymiä iteselle sopivammaksi	○	○	○	○	○