



LUND UNIVERSITY
School of Economics and Management

When you are kindly asked to stay at home

A quantitative study on elderlies' behavioral intentions to use digital services in the Swedish Covid-19 context

by

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Abstract

Title: When you are kindly asked to stay at home: a quantitative study on elderlies' behavioral intentions to use digital services in the Swedish Covid-19 context

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Purpose: The aim is to apply technology acceptance research on elderlies' use of digital services during a global pandemic, where risks associated with the corresponding physical alternatives are obvious but use is voluntary. By examining constructs based on a modified UTAUT2 framework, the following research question will be answered: Which factors are influencing elderlies' intention to use digital services in the context of soft recommendations during the Covid-19 pandemic?

Methodology: This is a quantitative research with a deductive approach and the study takes on a positivistic research philosophy. Data was gathered using an online survey. The collected data was then analyzed in SPSS using factor analysis and multiple regression analysis. The multiple regression analysis was used in order to reject or confirm the hypotheses.

Theoretical perspective: This study focused on reviewing previous literature regarding technology acceptance, Covid-19 and the perceived risks of using physical services as well as the uniqueness of services. Furthermore, the theoretical framework used for this research is a modified UTAUT2 model with the added constructs of Perceived risk of physical services and Perceived risk of digital services, thus theories connected to UTAUT2 have been reviewed.

Empirical data: Empirical data was gathered through an online questionnaire. The questionnaire included 35 items formulated as assertions and 117 responses were obtained.

Conclusion: In Sweden, where soft Covid-19 restrictions apply, elderlies' intentions to use digital services are actually influenced by governmental recommendations and behavioural influence from people in their close proximity as well as their user habits, rather than their own perceived risk connected to the use of the physical alternative.

Practical implications: The use of the adapted UTAUT2 framework is contributing to the research field of technology acceptance by including the perceived risks associated with the corresponding physical alternative from a consumer perspective. For managerial implications, results suggest the use of word-of-mouth, influencers and personalized communication for digital marketing purposes aimed towards elderlies.

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1. Introduction

The unprecedented current state of the world has established a newfound fear of going outside to accomplish daily tasks and activities. As a result, reports have shown that the use of digital services has increased among Swedish citizens in general and among the older age group (above 65 years of age) in particular. Most often, this older age group is pointed out as non-users of internet based technology (Internetstiftelsen, 2020a) and consequently neglected by marketers of such. However, this is a fast growing segment with huge potential. Among the Swedish population aged between 66-75, the share of internet users has in fact increased from 61 percent in 2010 to 93 percent in 2019 and from 46 percent to 69 percent among people aged 76 and above (Internetstiftelsen, 2020b). Technology usage among the older age group has been widely examined in prior literature, with the goal to close the digital gap between users and non-users of technology. Understanding their technology usage is crucial not only to create approachable communication, but also to understand how digital services and devices could be designed to include a larger proportion of the older age group in the digital society. As for today, modern life implies using digital services for performing instrumental tasks such as paying bills (e-banking), doing shopping (e-shopping) and getting medical help (e-health) (Blažič & Blažič, 2020). The digitalization of the everyday practices and services is usually seen as something inevitable for societal development, but it is important to ensure that this development becomes beneficial for everyone (Charmarkeh & Lagacé, 2017). This became essential in the beginning of 2020, with the outbreak of Covid-19 and staying at home recommendations.

The unique context of the Covid-19 pandemic suggests behavioral changes for people's use of digital services, as people try to avoid getting infected by the Covid-19 virus. This global pandemic escalates old and new issues in our ways of living considering that the main recommendation around the world has been to stay at home (Beaunoyer, Dupéré & Guitton, 2020), as the Covid-19 virus is transmitted at close contact between humans (Folkhälsomyndigheten, 2020). The pandemic has caused unprecedented implications that extensively impact inhabitants of the world, nevertheless the Covid-19 induced quarantine and recommendations to stay home which is very different compared to historical quarantines (Beaunoyer, Dupéré & Guitton, 2020). This is due to all technological advancements we have incorporated into our daily lives to make it possible to not leave the house (Beaunoyer, Dupéré

& Guitton, 2020). The digital services and online technologies became the main tool for a relatively normal everyday life (Beaunoyer, Dupéré & Guitton, 2020), thus, the current state of the world is unprecedented due to the digital tools we now inhabit.

The Swedish Covid-19 strategy differs from many other countries as Sweden's government has chosen to let most physical service providers continue their operations (BBC News, 2020), making the use of digital services a voluntary option. As the risk of becoming seriously ill from the Covid-19 virus increases gradually with age and becomes significant after the age of 65 (Folkhälsomyndigheten, 2021), people of this age are particularly vulnerable and counted as part of a risk group. Despite being recommended to limit close contacts and avoiding crowded spaces (Regeringen, 2020), people within this risk group are free to choose between digital and traditional physical services. Using a service is not the same as using a product since the service itself does not provide any value to the customer unless the customer is using it and hence gaining something from it (Grönroos, 2011; Grönroos & Ravald, 2011). The quality of that value is thus highly dependent on the individual experiencing it and the choice of service comes down to personal preferences. However, digital options can provide people with services without leaving their houses and hence avoiding the risk of being infected with the Covid-19 virus.

Since the Covid-19 pandemic hit Sweden in the beginning of 2020, increased usage of digital services has been reported by Internetstiftelsen (2020b), stating that the use of e-banking, e-shopping and e-health has increased the most among the retired population. In the Swedish context where digital and physical services co-exist, other factors besides the potential risk of being infected with the Covid-19 virus while using physical services are likely to cause this increase. These factors are important to identify, in order to continue the trend of increased digital service usage among elderlies. Extensive studies have been conducted within the field of technology acceptance among elderlies, but less in the context of a global pandemic where potential perceived risks associated with the use of a more traditional physical service could have a positive relationship with technology usage.

1.2 Research Purpose

The aim for this study is to apply technology acceptance research on elderlies' (e.g. people over 65 years of age) use of digital services during a global pandemic, where risks associated with the corresponding physical alternatives are obvious but use is voluntary. As Swedish

citizens are not urged to use digital services due to any strict physical restrictions, we seek to find which factors are influencing their usage. This will be done by reviewing previous literature in the field of technology acceptance and connecting it to the risks associated with elderlies and Covid-19 as well as the specific characteristics of services. Determinants of elderlies' intention to use digital services will be identified and primary data from elderlies living in the Swedish Covid-19 context will be collected and analyzed in order to find factors related to their intentional usage. Digital services that will be examined are e-banking, e-shopping and e-health and findings could be used to understand the best way to promote and develop such services particularly towards elderly in Sweden, but also in other countries with similar Covid-19 strategies as well as in countries which eventually will go from hard to soft restrictions. To fulfill this purpose, we ask the following research question:

Which factors are influencing elderlies' intention to use digital services in the context of soft recommendations during the Covid-19 pandemic?

1.3. Outline of the thesis

This thesis will follow a natural quantitative structure with a deductive approach. Thus, after presenting the introduction and research purpose in chapter 1, an extensive literature review of the chosen fields will be presented in chapter 2. The literature review is divided into the three separate research topics relevant for this thesis, namely, technology acceptance, Covid-19 and the perceived risk connected to physical services, and lastly the uniqueness of services. The aim of the literature review is to give the reader the opportunity to understand what findings have been developed in previous literature but also to clarify the novelty of this study.

The third chapter will present the chosen theoretical framework for this study, an adapted UTAUT2 model with two added constructs. This chapter will address nine constructs and the establishment of operational hypotheses for the research model. Chapter 3 ends with a visualization of the adapted UTAUT2 framework used for this study. Moving on, chapter 4 presents the methodology choices for this quantitative study, this includes the research design, data collection, survey design, item creation, method of analysis, ethical considerations and finally a method reflection. Chapter 4 will present the comprehensive pre-analysis and analysis process done in SPSS.

Chapter 5 will present the analysis and results obtained from the various analyzes conducted in SPSS accompanied by the relevant tables and figures. This chapter will discuss our key

findings and our hypothesis testing. Finally in chapter 6, we will present the discussion and conclusions drawn from the theoretical framework combined with our obtained statistical results. The research question and aim is revisited in this chapter. In addition, chapter 6 will address the practical implications derived from this study as well as limitations and suggestions for future research.

2. Literature Review

In this chapter, we will present the existing research topics relevant to our study in order to clarify the research gap that needs to be addressed. This chapter will present what novelty our research will bring to both academia and trade.

2.1. Technology acceptance

There is and has been a prominent interest among scholars to understand how and why technology is being accepted and adopted by individuals. Due to this reason, the field of technology acceptance has been studied from many different angles with differing theoretical models. Technology acceptance models are based on the idea that one's salient beliefs determine hers or his attitude towards an object, which will determine the intention to act a certain behavior and this behavioral intention (BI) serves as a predictor of actual use behavior (Agudo-Peregrina, Hernández-García & Pascual-Miguel, 2014). However, actual usage is hard to measure and therefore a controversial construct in acceptance models (Agudo-Peregrina, Hernández-García & Pascual-Miguel, 2014). Measuring actual use requires objective measures, generally by extracting data from system logs, or subjective measures gathered from self-reported usage. Since these measurements are often not available in pre-adoption stages, the relation between behavioral intention and actual usage is hard to predict.

Two commonly used technology acceptance models are the Technology Acceptance Model (TAM) (Davis, 1989) and the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh, Morris, Davis & Davis, 2003). UTAUT was composed of eight different theoretical models including TAM, and the authors provided evidence that the model better explains technology acceptance compared to the previous models. The key determinants of BI in UTAUT are effort expectancy, performance expectancy, social influence and facilitating conditions (Venkatesh et al., 2003). One of UTAUT's weaknesses is that it takes an

organizational perspective where usage is often mandated by the management (Dwivedi, Rana, Jeyaraj, Clement & Williams, 2019). To overcome this, UTAUT2 was introduced by Venkatesh, Thong and Xu (2012) and captures the individual characteristics of the users that may influence their behaviors. Three constructs were added in UTAUT2 - price value, hedonic motivation and habit (Venkatesh, Thong & Xu, 2012).

The research stream of technology acceptance among elderlies has gotten more focus just in the past years. A meta study by Ma, Chan and Teh (2021) discovered that effort expectancy, performance expectancy and social influence were all substantially correlated with elderlies' BI to use technology while facilitating conditions was not. By using the UTAUT2 model, various scholars have presented results that support the influence of price value, hedonic motivation and habit on elderlies' BI to use different kinds of technologies. Kwon and Noh (2010) found out that older consumers' price perception will affect their intention to shop online and the influence of hedonic motivation was supported in a study by Talukder, Sorwar, Bao, Ahmed and Palash (2020) who examined elderlies' BI to use wearable healthcare technology. Macedo (2017) studied the use of information and communication technology and found out that habit was significantly related to elderlies' BI.

Although effort expectancy, performance expectancy, social influence, price value, hedonic motivation and habit have shown to be significantly related to elderlies' BI, various extensions of technology acceptance models by adding socio-demographic and/or psychological constructs have indicated to increase the understanding in specific contexts (Chen & Chan, 2014; Lian & Yen, 2014; Niehaves & Plattfaut, 2014; Nikou, 2015; Talukder et al., 2020; Guner & Acarturk, 2020). Some findings have highlighted the potential perceived risks of using internet based technology, such as trust, privacy and security issues (Chopdar, Korfiatis, Sivakumar & Lytras, 2018; Chan, 2014; Guner & Acarturk, 2020; Talukder et al., 2020). Other negative aspects of using digital services in particular have been found to be lack of usefulness, lack of human interactions and risk of service failure (Vannucci & Pantano, 2019). Perceived risks connected to a digital service (e-shopping) was examined in a study by Lian and Yen (2014) and indicated to have a significant influence on elderlies' BI. However, we have not found any prior research that examines the perceived risk connected to the use of a corresponding physical alternative of a technology.

Due to Sweden's soft recommendations of social distancing, physical and digital services co-exist and elderlies' are free to choose between digital and physical services. However, in the context of Covid-19, there are some obvious risks associated with traditional services involving physical contact to other people, which may influence one's intention to use a digital option instead. There is limited understanding regarding drivers and barriers of technology usage in relation to its physical alternative which calls for further examination of such. There is also less studies focusing on service usage in comparison with product usage and hence, the unique characteristics of services needs to be addressed. Perceived risks connected to elderlies' usage of physical services as well as the uniqueness of services implies both drivers and barriers for elderlies' usage of digital services, which will be covered in the following sections.

2.2. Covid-19 and the perceived risks connected to physical services

Since the Covid-19 virus is transmitted at close contact between humans (Folkhälsomyndigheten, 2020), using physical services involves a possible risk of being infected by the virus (Xie, Charness, Fingerman, Kaye, Kim & Khurshid, 2020). Once infected, people above 65 years of age are at a higher risk of being seriously ill in Covid-19 (Folkhälsomyndigheten, 2020). The fact that governments are recommending this risk group to avoid activities with close physical contact to other people have raised concerns regarding both physical and psychological issues. Loneliness and depression as a result of social distancing is one of the most prominent concerns among researchers (Brooke & Jacksson, 2020; Rout, 2020; Xie et al., 2020).

Online platforms that enable elderly to continue to participate in activities such as community engagement and everyday human interactions are important to go from "social distancing" to "physical distancing" (Xie et al., 2020). To ensure elderlies' needs for information, services and social inclusion during this pandemic, going digital has become a necessity but that alone is insufficient (Xie et al., 2020). Whilst online technology has the potential to reduce the transmission of Covid-19, it may add to the alienation of the older age group who still lags behind in digital development (Rout, 2020). Hence, understanding their intention to use digital services during a crisis like this is vital for both present and future pandemics.

Another potential consequence of Covid-19 is the feeling of fear, which could be caused by unexpected events such as the outbreak of a disease (Pakpour & Griffiths, 2020). In addition, the uncertainty surrounding the knowledge about the Covid-19 virus and the constant availability of unverified information can add to that fear, particularly within the risk groups (Rout, 2020). Fear could be defined as an adaptive emotion motivating an individual to deal with potential threats (Mertens, Gerritsen, Duijndam, Salemink & Engelhard, 2020) and fear appeals is connected to attitudes of change in the Protection Motivation Theory (PMT) developed by Rogers (1975). The PMT is a widely used theory within consumer behaviour research and studies about people's reactions to threats in different environmental settings. The PMT has for example been used to investigate mobile health service (m-health) adoption, as m-health usage is not only about technology acceptance behaviour, but also related to health behaviour (Guo, Han, Zhang, Dang, & Chen, 2015). The authors found out that threat appraisal factors have stronger effects on attitude towards m-health among elderly than the coping appraisal factors (Guo et al., 2015). These results indicate that the threat the elderly may feel towards hers or his health will influence their behavior more than their perceived ability to actually deal with that threat (Guo et al., 2015). The PMT has also been used to study users' intention to adopt protective technologies, such as anti-spyware (Chenoweth, Minch & Gattiker, 2009). In their findings, threat appraisal factors were found to significantly influence the intention to adopt this kind of protective technology, which is another indicator that the intention to use digital service could be influenced by threat appraisal factors such as the perceived risk of being infected by Covid-19 while using physical services.

Despite potential risks associated with physical services and the transmission of Covid-19, going digital is not an obvious choice for everyone. Since physical service providers are still operating in Sweden, elderly could choose less crowded times for their visits to minimize potential risks of being exposed to the virus while sticking to the physical option. This leads to the question - what is special about services that would make people prefer either a digital or physical alternative?

2.3. Uniqueness of services

This section of the literature review will cover the uniqueness of services and how value is co-created in both physical and digital services. Unmistakingly, services differ extensively from products due to their distinguishing characteristics such as being heterogeneous and intangible (Mansharamani, 2005). What constitutes good service can vary from individual to individual

and their expectations and hence, services need to be adapted to the customers and their needs. The author suggests that by adapting the service supply and flow for high demand times and reducing demand when it is not necessary, many firms try to increase the demand in off-peak times by reducing the price to smoothen out the utilization. Thus, the price value for a service can differ extensively in regards to when the service is used and the service process implies high heterogeneity (Mansharamani, 2005). Intangibility on the other hand, implies that the service provider cannot create the value themselves since the value is not embedded in the sources delivered by the firm (Grönroos, 2011). Thus, is it only the customer that can determine what value was created in the specific transaction (Grönroos, 2011). This is called value co-creation.

Value co-creation is the activity within service operations where the service provider and the consumer together co-create the value of the service (Grönroos, 2011). Grönroos (2011) explains that value creation is a process in which the user or consumer becomes better off and gains something, for example if they use the service of e-shopping, they feel better off than they did before. This implies that the company in question is in charge of the value creating process, while the customer is co-creating the value by using the service and gaining something from it (Grönroos, 2011; Grönroos & Ravald, 2011). Grocery shopping itself is not the value creating process but for example by using the service of getting the products to one's house without exposing oneself to the covid-19 virus and then being able to cook a lovely family dinner where people gathers and shares their experience is where the actual value is created for the consumer.

When it comes to value creation in regards to digital services it is crucial that the digital service providers enhance the human factors in order to intensify their business value and continue to grow in a competitive market (Saunila, Ukko & Rantala, 2019). This is the challenge which explains the complexity of digitizing services. Digitization requires people to change their ways and customers must find a greater value in the digital service in order for them to shift from the traditional physical service. As mentioned above, services are highly dependent on heterogeneity and being adaptable for each customer, which becomes even easier to apprehend with digital services as the world of technology and algorithms make it possible to personalize the service and service interaction (Saunila, Ukko & Rantala, 2019).

However, one of the most important aspects in value co-creation within digital services has been found to be trust; trust to the service provider and the ability to gain more information

(Saunila, Ukko & Rantala, 2019). Thus, trust is needed to reduce the perceived risk with the digital service in question, which in turn will be used to create a relationship and build the reputation for the service provider. Mansharamani (2005) explains that services are very dependent on their reputation, considering that services are highly intangible and customers can rarely experience the service before they have purchased it. Even though technology has enabled a wider assortment of digital services online, where customers could easily find information and reviews about different service providers and compare their prices, many customers are bound to seek reviews and information from their own social groups before making any decisions (Mansharamani, 2005; Saunila, Ukko & Rantala, 2019).

2.4 Conclusion of chapter

In concluding remarks as for the previous research concerning the topic, there is a research gap to be filled regarding Swedish elderlies' BI to use digital services during the current Covid-19 pandemic. Besides examining original UTAUT2 constructs in the context of a pandemic, we include the influence of perceived risks associated with using the corresponding physical services as well as perceived risk of using digital services. This will add to the understanding of elderlies' BI to use digital services.

Given the unique situation with Covid-19 and the different strategies chosen on a national level, it is necessary to adapt the research model in line with the Swedish context during the current pandemic. Unlike other countries, Sweden has not gone into any complete lockdowns during the pandemic and hence, using digital services has been voluntary even for people within risk groups. Voluntariness assumes that individuals have considerable freedom in their decision to use a digital service, which may not be true in mandatory settings (Dwivedi, Rana, Jeyaraj, Clement & Williams, 2019) such as in countries with hard restrictions of physical distancing. Hence, the UTAUT2 model which captures the individual's own engagement in technology usage is suitable for the use in the Swedish context. Despite Sweden's voluntary setting, the use of digital services has increased the most among people above the age of 65. The risk associated with physical contact may be one reason, but other factors are likely to influence the elderlies BI to use digital services in line with previous research.

Constructs from UTAUT2 that have shown to be significantly related to elderlies' BI to use technology will be tested to examine their influence on elderlies' BI to use digital services in

the Swedish Covid-19 context where usage is voluntary. These are effort expectancy, performance expectancy, social influence, price value, hedonic motivation and habit. Additionally, perceived risk of using digital services will be added as it has shown to significantly influence this age group. The literature gap of analyzing the influence of perceived risk of using a corresponding physical alternative of a technology will be filled by including the perceived risk of using physical services as well.

Using perceived risk of using physical services as a determinant for the BI to use digital services is supported by earlier studies that have found threat appraisal factors to have a significant influence on users' intention to adopt protective technologies. This has shown to be true regarding the use of m-health (Guo et al., 2015), but during the Covid-19 pandemic it is not only m-health that could prevent health threats but also other digital services for avoiding physical contact with other people. Hence, these findings indicate that the perceived risk associated with using physical services may influence elderly's intention to use digital services as it prevents transmission of the Covid-19 virus. Using a physical service in the context of Covid-19 implies a risk of being infected with the virus and hence, digital services could be seen as a protective technology in this context.

The uniqueness of services provides additional support for the examination of perceived risk of using digital services, effort expectancy, performance expectancy, social influence, price value, hedonic motivation and habit. Trust has shown to be the most important aspect for value co-creation in the service process (Saunila, Ukko & Rantala, 2019), which could be influenced by the perceived risk of using a digital service. Hence, perceived risks are interesting to investigate while studying digital services. Heterogeneity is required in service processes, since what constitutes "good service" may vary between individuals and their expectations (Mansharamani, 2005). This makes performance expectancy an important factor to consider. Value is co-created in service operations and the service provider cannot deliver the value themselves (Grönroos, 2011), which implies that the customer needs to put effort in the actual process. Effort expectancy should thus be of great importance as well. But it is not only in the service transaction itself that value can be created. Using a digital service such as online grocery shopping has the potential to bring enjoyment or satisfaction even after the actual service is delivered which is connected to hedonic motivation. Services are also highly dependent on

their reputation and customers tend to seek advice from their social groups prior to usage (Mansharamani, 2005). Hence, social influence should be an important determinant for the BI to use a digital service. Since the price of services tends to vary with demands (Mansharamani, 2005), price value is interesting to examine during the pandemic as the demand for contactless services has increased. New behavioral patterns require people to change their ways which implies challenges but also great opportunities for service providers (Saunila, Ukko & Rantala, 2019). Keeping habit as a construct in our research model helps investigate whether the habit of using digital services will influence elderly's BI to use them.

3. Theoretical Framework

This section will present the theoretical framework used for this study. In order to reach our aim and answer our research question we will use an adapted UTAUT2 framework with the added variables of perceived risk of digital services and perceived risk of physical services. This section will further demonstrate our establishment of operational hypotheses for each of the variables.

3.1. UTAUT2

To unite the understanding of technology acceptance, Venkatesh et al. (2003) created the model Unified Theory of Acceptance and Use of Technology (UTAUT) composed out of eight previous models within the research field. UTAUT is composed of - Technology Acceptance Model (TAM), Motivational Model (MM), Theory of Reasoned Action (TRA), Theory of Planned Behavior (TPB), Combined TAM and Model of PC Utilization (MPCU), TPB (C-TAM-TPB), Social Cognitive Theory (SCT) and Innovation Diffusion Theory (IDT) (Venkatesh et al., 2003). UTAUT consists of four key constructs; performance expectancy, effort expectancy, social influence and facilitating conditions (Venkatesh et al., 2003). While facilitating conditions have a direct impact on use behaviour in UTAUT, performance expectancy, effort expectancy, social influence are related to behavioural intention (BI) (Venkatesh et al., 2003).

Considering that the four key constructs in UTAUT takes an organizational perspective of research, the model has been developed to adopt more of a consumer's perspective by adding the constructs hedonic motivation, price value and habit (Venkatesh, Thong & Xu, 2012).

UTAUT2 made it possible to understand the intention to use a technology from a user's perspective seeing as the new constructs better relate to the cognitive and psychological aspects of adopting new technologies (Venkatesh, Thong & Xu, 2012). We find the developed UTAUT2 model to be more relevant for our study since we aim to understand the BI of digital services from the perspective of the elderly consumers. As well as the idea that the UTAUT2 is more suited for studies related to marketing and consumer behaviour (Venkatesh, Thong & Xu, 2012). Nevertheless, the UTAUT2 has been reconstructed in order to fit our research questions.

The construct of facilitating conditions is removed from our adapted UTAUT2 model as it has been proven to be insignificant in previous literature about elderlies' technology acceptance (Ma, Chan & Teh, 2021). Two constructs are added: (1) perceived risk of using physical services and (2) perceived risk of using digital services while the original constructs of performance expectancy, effort expectancy, social influence, hedonic motivation, price value and habit remain relevant. Instead of trying to understand actual use behavior which has been criticized for being hard to predict (Agudo-Peregrina, Hernández-García & Pascual-Miguel, 2014), we limit the model to analyze the constructs' influence on BI.

3.1.1 Perceived risk of using physical services

Perceived risk of using physical services (PRPS) is constructed from the idea that the pandemic has caused risk groups to use digital services in order to not fall victim to the Covid-19 virus. The Swedish Public Health Agency (Folkhälsomyndigheten, 2020) have made it clear to the Swedish population that the Covid-19 virus is transmitted by close contact between people and that people above the age of 65 are at a higher risk of falling seriously ill and dying of Covid-19. This might have caused services that require one to go out in public and interact with other people be perceived as riskful especially for the risk group (Xie, Charness, Fingerman, Kaye, Kim & Khurshid, 2020). Examples of such services are running bank errands, grocery shopping or going to the doctor. In regards to the Covid-19 pandemic, digital services have created a possibility for people in the risk group to achieve more tasks in the comfort of their own home while avoiding the risk of completing the tasks physically. While using a digital service instead of a physical service in the context of Covid-19, the individual may feel satisfied with her- or himself for following guidelines of social distancing and protecting her- or himself and others to be infected with the virus. If a person feels satisfied while using a digital service, she or he will be more willing to gain increased experience (Guner & Acarturk, 2020). It has been found

that the perceived risk associated with using physical services may influence the elderly's intention to use digital services since it reduces the chance of being infected with the Covid-19 virus (Raza et al., 2020).

The increase of elderly using digital services during the pandemic could be explained by the Protection Motivation Theory developed by Rogers (1975), as it connects fear appeals to the attitude of change. The fear of being infected by the Covid-19 virus while using physical services may have influenced elderly to start using digital services instead. The sudden increase could also be explained by individuals' emotional reactions from the base of Maslow's hierarchy of needs (1954) pyramid. Maslow's hierarchy of needs portrays the importance of covering our most basic needs such as food, water and security before we can fulfill our other needs. Loxton, Truskett, Scarf, Sindone, Baldry and Zhao (2020) connect Maslow's pyramid (1954) to the phenomenon of panic purchasing and the customer behaviour during the Covid-19 crisis. If customers are motivated to prioritize their purchases towards physical needs, the same should apply to the use of services. We have therefore found evidence that the fear or risk of getting infected by the Covid-19 virus may affect consumers behaviors. Hence, our first hypothesis is:

H1: Perceived risk of using physical services has a significant influence on the behavioral intention to use digital services

3.1.2 Perceived risk of using digital services

Perceived risk is defined as the user's own expectation of the suffering one may experience in the pursuit of a desired outcome (Chopdar et al., 2018). The construct perceived risk of using digital services (PRDS) will here refer to the potential risks associated with using digital services that are relevant for the elderly. Relevant risks for elderly using digital services are information evaluation, scams, identity theft, paying in advance, literacy issues as well as not being able to get satisfactory service over the internet. For example, many seniors trust the information published online since they are not educated in information evaluation (Ma, Chan & Teh, 2021). The risk of scams and identity theft is related to perceived trust of using the digital service and may affect the elderly's BI to use digital services (Guner & Acarturk, 2020). Lian and Yen (2014) found that older consumers see e-shopping as a risk due to the action of paying in advance and not being able to see the product before purchasing. E-shopping creates uncertainty and risk due to the lack of trust in the internet vendor and may affect the behavioral

intention to use internet shopping services (Kim, Xu & Gupta, 2012). Furthermore, the newer the innovation the higher the amount of risk which elderly may affect elderlies' behavior patterns. In addition, since elderlies' literacy issues online are higher than for the younger generation, this can pose a threat to using digital services due to the difficulty understanding (Lian & Yen, 2014). As elderlies' have not been equipped with enough tools to develop their digital skills this may have an effect on their perception of the risk with digital services (Datta, Bhatia, Noll & Dixit, 2018).

Merhi, Hone and Tarhini (2019) found that the perceived trust of a technology affects the influence which can be compared as an inverse relationship with risk, the higher trust one has for a technology the less risk one experiences when using the technology. Hence, the trust elderlies' have for the digital services will affect the perceived risk of using these services. Some of the most extensive explanations for why people have not adopted digital services are due to the concerns of possible security risks that may arise when using these services (Merhi, Hone & Tarhini, 2019). These risks serve as reasons for digital exclusion and reasons for why elderly people may not use digital services. Hence, our second hypothesis is:

H2: Perceived risk of using digital services has a significant influence on the behavioral intention to use digital services

3.1.3 Performance expectancy

Performance expectancy (PE) is defined as the belief that a certain technology, in this case digital services, will be beneficial and advantageous to the individual (Venkatesh et al., 2003). PE was declared by Venkatesh et al. (2003) to be the strongest predictor of BI and this has been confirmed in more recent studies with focus on elderlies' BI in particular (Ma, Chan & Teh, 2021). This implies that the greater perceived use of a digital service, the higher intention among elderlies to use it. It has been revealed that some elderly who do not use information technology may find it irrelevant and useless in their daily lives due to lack of knowledge of its potential benefits (Courtney, Demiris, Rantz & Skubic, 2008; Fausset, Harley, Farmer, & Fain, 2013) which confirms the influence of PE on BI. A digital service will only be fully incorporated into the daily lives of elderlies ones they realizes its specific functions (Hernández-Encuentra, Pousada & Gómez-Zúñiga, 2009), benefits (Raymundo & da Silva Santana, 2014) or personal meanings (Larsson, Larsson-Lund & Nilsson, 2013). The increased usage of digital services among elderlies during the pandemic may indicate that a larger

proportion have started to discover its usefulness, such as reaching a wider assortment online and the possibility to make more informed purchase decisions through the access to detailed information and customer ratings and reviews. Hence, our third hypothesis is:

H3: Performance expectancy has a significant influence on the behavioral intention to use digital services

3.1.4 Effort expectancy

Effort expectancy (EE) is defined as the degree of ease one associates to using the technology (Venkatesh et al., 2003), or in this case a digital service. The importance of EE in use behaviour has theoretical support from research about self-efficacy, contingent decision behavior and adoption of innovations (Davis, 1989). Bandura's (1982) ideas about self-efficacy function as a close determination of behavior and the concept is defined as the judgement of how well one can handle actions required for dealing with potential situations. This definition of self-efficacy is close to EE as described above, suggesting EE as a determinant of BI (Davis, 1989). Based in behavioural decision theory, the cost-benefit paradigm (Beach & Mitchell, 1978; Johnson & Payne, 1985) explains an individual's choice behaviour as a tradeoff between the effort required and quality of the outcome of the decision made. This tradeoff has been used to explain why a decision maker would alter decisions in response to changes in the complexity of a certain task, which provides another reason for suggesting EE as a determinant of BI (Davis, 1989). In research about innovation adoption, complexity is proven to have a widely consistent significant relationship between the characteristics of an innovation and its adoption (Tornatzky and Klein, 1982). Since level of complexity and ease of use could be seen as similar, using EE as a determinant of BI is supported (Davis, 1989).

In a meta study by Ma, Chan and Teh (2021), a positive relationship between EE and BI was confirmed, indicating that the elderlies' intention to use information technology is significantly influenced by the ease of using the technology. Elderlies who are not convinced about the potential benefits of a technology may be uncertain because of the anxiety connected to the perceived complexity of that service (Czaja, Charness, Fisk, Hertzog, Nair, Rogers & Sharit, 2006). Others may not be interested in digital services due to the difficulty of the interface or design, which do not consider the deterioration of people's mental and physiological conditions as they age (Ma, Chan & Teh, 2021). However, a technology may be deemed as useful when

found to be easy to use, as Chen and Chan (2014) found out that the effects of a technology's ease of use is reflected by its usefulness. Hence, our fourth hypothesis is:

H4: Effort expectancy has a significant influence on the behavioral intention to use digital services

3.1.5 Social influence

Social influence (SI) is related to the idea that one would be more susceptible to use the technology if important people in one's close proximity use and accept the technology (Venkatesh et al., 2003). SI influences behaviour through compliance, internalization and identification (Venkatesh & Davis, 2000). Compliance is a mechanism that causes alteration in one's intention as a response to social pressure, while the internalization and identification relates to the shift in one's belief structure and could cause a response with the aim to gain social status (Venkatesh et al., 2003). Hence, the way an individual believes others will view them as a result of using digital services, will influence their BI.

Previous research has proved SI to be one of the most important factors influencing elderly people to use new technology (Niehaves & Plattfaut, 2014; Lian & Yen, 2014), considering that elderly people are prone to be affected by their social surroundings (Ma, Chan & Teh, 2021). Elderlies' BI to use technology has shown to be influenced by their peers (Tseng, Hsu & Chuang, 2013), family members (MJS & de Guzman, 2015) and opinion leaders (Pan & Jordan-Marsh, 2010). This is especially applicable when they have a rather small experience with the technology in question, they are then greatly influenced by their social connections (Talukder et al., 2020).

In the context of Covid-19, concerns among friends and families and recommendations of social distancing issued by the Swedish Government as a response to the risks of being infected with the virus is likely to influence elderlies' BI. The increased usage of digital services among the elderly during the pandemic indicates a shift in their attitude towards technology, which could be explained by SI attributed to internalization and identification. Additionally, the social pressure from being part of a risk group that is recommended to keep distance and staying at home could also cause a shift in the elderlies BI, as a response to compliance. Hence, our fifth hypothesis is:

H5: Social influence has a significant influence on the behavioral intention to use digital services

3.1.6 Hedonic motivation

Hedonic motivation (HM) is related to the fun or enjoyment that results from using a specific technology (Talukder et al., 2020; Venkatesh, Thong & Xu, 2012). Based on prior research on consumer behaviour and information systems, HM was found to be an important explanation to why consumers use technology (Brown and Venkatesh, 2005). HM is derived from motivation theory (Vallerand, 1997) and was integrated to the original UTAUT model by Venkatesh, Thong & Xu (2012) to complement the utility aspect that has shown to be the strongest predictor of BI. When tested on consumers' use of mobile internet technology, the authors found the construct of HM to have a critical impact on BI. In later studies, HM has been tested in studies particularly focused on elderlies and results have shown that HM has a significant influence on their BI to use technology (Macedo, 2017; Talukder et al., 2020). In the situation during the prevailing pandemic, the social connectivity and pleasure from digital services may have a significant effect on the elderlies' BI to use digital services as it enables them to go from social distancing to physical distancing. Hence, our sixth hypothesis is:

H6: Hedonic motivation has a significant influence on the behavioral intention to use digital services

3.1.7 Price value

Price value (PV) is the original construct by Venkatesh et al. (2003) which is the believed trade-off between the benefit and the financial cost of the technology. Previous literature suggests that the monetary value of a product or service is a highly influential factor to the perceived value of the product or service (Macedo, 2017; Venkatesh, Thong & Xu, 2012), thus, is the price I pay worth what I get? A critical relationship between price and adoption of new technologies has been found, as consumers are more likely to use a service with a reasonable price (Merhi, Hone & Tarhini, 2019). From a different viewpoint, Guner & Acarturk (2020) discuss the importance of price value for the older demographics when adopting a new technology. This concerns whether the elderly find the digital service cheap and valuable enough compared to the physical alternative. In Sweden the average salary is 35 500 SEK/month (Ekonomifakta, 2020) compared to the average female pension income that is

approximately 15 000 SEK/month and the average male pension income that is 23 000 SEK/month (Min Pension, 2021).

Statistics on costs regarding e-health services and the corresponding physical service have shown that the available data cannot address which service would be cheaper (Dagens samhälle, 2019), thus the price will be approximately the same for both services. It is found that people immerse themselves in app-based and e-shopping in order to receive price-related benefits, considering that cost saving is one of the most important factors for consumers when using digital shopping services (Tak & Panwar, 2017). Furthermore, considering that the electronic marketplace makes it easy for consumers to compare the price on the different sites in order to find the cheapest alternative (Kim, Xu & Gupta, 2012), the consumers may find the price value of using digital services important. Related to this, even if the consumer may receive discounts they are also affected by the delivery costs that can be compared to one's transportation costs getting to and from the physical store (Lopez-Loces, Musial, Pecero, Fraire-Huacuja, Blazewicz & Bouvry, 2016), this can be applied to all physical services. This choice and price perception will differ in relation to where the elderly live and if it is close to the physical service location. Thus, the price perception of using the digital service before the physical option may be affected by saving opportunities and delivery costs in comparison to the costs of using the physical service. Hence, our seventh hypothesis is:

H7: Price value has a significant influence on the behavioral intention to use digital services

3.1.8 Habit

Habit (HT) is defined as the automatic behaviors individuals tend to perform (Venkatesh, Thong & Xu, 2012). Habits are performed without any extra consideration or deliberation (Verplanken, Aarts & van Knippenberg, 1994), implying that the use of digital services may come naturally for many consumers. Once consumers start to use a technology or service more frequently it will become a habit, this is proven to be especially true for mobile devices since it provides quick and easy access to limitless content that will create repetitive usage sessions (Merhi, Hone & Tarhini, 2019).

Furthermore, previous research has found that senior citizens accept new technology faster when it meets their needs, thus it can become a habit if it fulfills their expectations. Göthberg and Englund (2020) discovered that despite many elderly people may feel unfamiliar using digital services most of them use it daily. This implies that elderly people underestimate their

technical abilities considering that there is discrepancy between their believed habit and their actual experience (Göthberg & Englund, 2020). This can be connected to Blažič's and Blažič's (2020) idea that elderly people have created the feeling that they are outsiders to the digital world and this is now a part of their personality. This makes habit an interesting variable to look at considering that elderly people's own perception of their digital exclusion may differ from the actual reality. Larsson, Larsson-Lund and Nilsson (2013) found out that if elderly people could find personal meaning in performing internet based activities, and through provision of supportive conditions, they were able to incorporate those activities in their daily lives. As the Covid-19 pandemic has revealed the importance of being digitally active for independent living, elderly people may have reassessed their attitudes towards the use of digital services which calls for further examination of their technology acceptance.

We find HT central for research in order to see if the elderly have become accustomed to using digital services during the pandemic and if this will be significant for the behavioral intention. Hence, our eighth hypothesis is:

H8: Habit has a significant influence on the behavioral intention to use digital services

3.2 Adapted UTAUT2 Framework

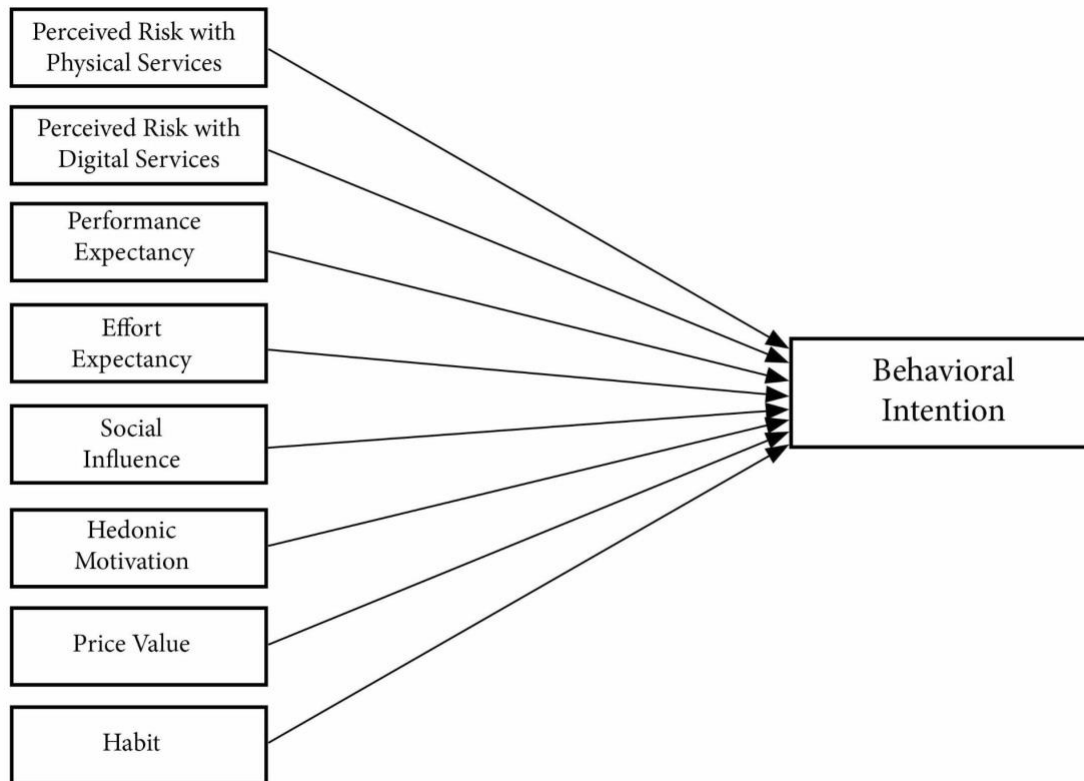


Figure 1 Adapted UTAUT2 Framework

4. Methodology

The methodology chapter will present the chosen method for this study. The following sections will provide further explanations for our research design, sampling and data collection, survey design including item development, pilot study, method of analysis, ethical considerations as well as a method reflection. We have chosen to use an online survey for data collection and the item development and the necessary considerations for this survey will be further explained throughout this section.

4.1 Research design

This study will take a deductive approach when researching our intended topic, due to this being a small scale quantitative study. We will deduce hypotheses from previous research with

the aim to either reject or confirm them. We will gather information related to previous UTAUT2 studies as well as information related to risks with Covid-19 and risks with digital services in order to create hypotheses for each of our constructs in the adapted UTAUT2 model. Our intended aim with this approach is to discover which of the chosen constructs provide a significant explanation for the behavioral intention to use digital services among the elderly, as well as to see if either the risk with physical or digital services are significant for the BI.

This study is based upon the positivistic research philosophy. Positivism is the most common and relevant epistemological perspective to use when the aim is to confirm or reject hypotheses (Bryman, 2012). Bergman (2012) states that objectivity and testability are the cornerstones of the positivist perspective, we will therefore conduct an online survey in order to gather objective responses that can be turned into testable statistics.

4.2 Sampling & Data Collection

The target group for the study are individuals above 65 years of age, residing in Sweden. Since the global internet penetration rate differs from the highest rate of 96% in northern Europe to the lowest rate of 24% in eastern Africa (Statista, 2021a), we have decided to limit the study to one geographical area. Although Sweden has similar internet adoption rates as its nordic neighbours Denmark, Norway and Finland (Statista, 2021b), countries have had different approaches while coping with the prevailing Covid-19 pandemic. Due to country specific regulations and recommendations, we have decided to exclusively focus on Swedish consumers while studying the adoption of digital services during the pandemic.

The non-probability sampling method of convenient sampling will be used due to the lack of resources and time during this study project. This method builds on accessibility, e.g., responses are gathered from people that are available to the researcher (Bryman, 2012; Pallant, 2003). The sample size required is calculated by using a formula developed by Tabachnick and Fidell (2007). According to the authors, the sample size, N should be greater than $50+8m$, where m is the number of independent variables used. Hence, this current study should require at least 114 survey responses ($N > 50 + (8 \times 8) = 114$). To spread the survey, we will use seniors' groups on social media and ask organizations such as Pensionärernas Riks Organisation (PRO) to send out inquiries to participate to their members.

4.3 Survey design

We have chosen to conduct an online survey to gather information about the elderly's opinions and intentions towards using digital services. The survey will be in Swedish to ensure that our target group fully understands the questions. The respondents will firstly be presented with basic information about why we are conducting this survey and how we will manage the responses ethically, see appendix A. We will present the respondents with our definition of digital services and that it includes e-banking, e-shopping and e-health services to make sure that they are aware of the focus of the survey. The respondents will be asked to answer two demographic questions of age and gender to ensure heterogeneity of the target group as well to ensure that our respondents are someone we would define as an elderly - someone above 65 years of age. The age question is of ratio scale whereas the gender question is of nominal scale since it is more of a classification than a ranking. In addition to this, we will include a question regarding their previous experience with digital services which might be a subject for the discussion of results. The experience question will be of ordinal scale. In the following section of the online survey, we will present the respondents with items formulated as assertions related to the constructs in our adapted UTAUT2 framework. We will have approximately 3-5 assertions for each construct. Every assertion will be answered by using a 5-point Likert-scale ranging from 1-Strongly disagree to 5-Strongly agree. We chose a 5-point Likert-scale as opposed to a 7-point scale in order to not overwhelm our target group with choices. The items using a Likert-scale are of ordinal scale since it ranks qualitative responses.

We will conduct a pilot study for our online questionnaire, in order to test the survey and eliminate any small errors that could possibly affect the validity or reliability of the data (Olsson & Sörensen, 2011). We will ask approximately 5-10% of our sample size to provide constructive criticism on the formulations of the items as well as the survey in general. This will be done before we send out the survey for further responses.

4.4 Variables

4.4.1 Dependent variable

“The degree to which a person has formulated conscious plans to perform or not perform some specified future behavior” (Warshaw & Davis, 1985, p. 214) is further known as the behavioral

intention. The behavioral intention has been thoroughly used to determine and understand technology acceptance and use (Venkatesh, Brown, Maruping & Bala, 2008). This variable is most often measured using items and assertions related to duration, intensity and frequency of use (Venkatesh, Brown, Maruping & Bala, 2008). Thus, this definition and previous research regarding behavioral intention (Venkatesh, Brown, Maruping & Bala, 2008; Venkatesh, Thong & Xu, 2012; Talukder et al., 2020) has been employed to choose relevant items. One example item for behavioral intention is as follows *I intend to use digital services on a daily basis.*

4.4.2 Independent variables

The measure for the variable Perceived risk with physical services (PRPS) was based on the previous studies of Raza et al. (2020) and Walrave, Waeterloos and Ponnet (2020) that test similar variables for fear and stress due to Covid-19. PRPS is in this study constructed from the idea that the fear of falling victim to the Covid-19 pandemic by avoiding places of that spread infection may have an effect on the behavioral intention to use digital services. Example of an item is *I do not want to leave my house because of the risk of being infected with the Covid-19 virus.*

For the variable Perceived risk with digital services (PRDS) we adhere to the more commonly used variable of perceived risk with technology that may affect the behavioral intention. PRDS is defined as the expectations the user may have on a certain technology compared to the suffering they may experience in the pursuit of the wanted outcome (Chopdar et al., 2018), thus, does the risk of using the technology have an effect on the behavioral intention. We based the items on previous research that have measured perceived risk from Ma, Chan and Teh (2021), Guner and Acarturk (2020), Kondrat (2017), Alaeddin, Rana, Zainudin and Kamarudin (2018), and Lian and Yen (2014). Example of an item is *I find that digital services could expose me to identity theft.*

The variable Performance expectancy has been found to be one of the key predictors of the behavioral intention to use a certain technology (Venkatesh et al., 2003). This is based on the idea that the benefits the user may receive from using the technology will impact the behavioral intention (Venkatesh et al., 2003). The items for this construct were based on the previous studies from Venkatesh et al. (2003) and Talukder et al. (2020). Thus, the items used address what the elderly would gain from using digital services, for example one item is *Using digital services improves my productivity.*

The measure of the variable Effort expectancy was based on Venkatesh et al.'s (2003) and Talukder et al.'s (2020) research. Effort expectancy concerns the ease or simplicity of using a technology and that this may affect the user's behavioral intention (Venkatesh et al., 2003). Thus, in regards to this study this relates to how easy the elderly find using digital services. An example of an item is *Learning how to use digital services is easy for me*.

The fourth variable Social influence refers to what impact the user's social group or family may have on their use of a technology (Venkatesh, Thong & Xu, 2012). Thus, in regards to this study it relates to the idea that the elderly's friends or family would influence their behavior and that this will make them use digital services. We based the items off of Venkatesh et al. (2003) and Talukder et al. (2003). One item would be *People who influence my behavior think I should use digital services*.

The variable Hedonic motivation refers to the notion that user's will use and continue to use a certain technology if it is fun and enjoyable (Venkatesh, Thong & Xu, 2012). Thus, in this study we use this variable to understand if elderly find that the pleasure and enjoyment they gain from using a digital service is significant for their behavioral intention to use a digital service. Therefore, one of our items for this construct is *Using digital services is fun*. We based the items off of Talukder et al. (2020), Venkatesh, Thong & Xu (2012) and Cheng, Sharma, Sharma & Kulathunga (2020) studies.

The variable Price value is connected to the idea that the user's behavioral intention to use technology is dependent on how expensive the technology is and if it is worth the trade (Venkatesh, Thong & Xu, 2012). Thus, in regards to this study the construct concerns if the elderly find that digital services are worthy of their price and if this is significant for their intention to keep using the digital service. The items are based on previous research from Talukder et al. (2020), Venkatesh, Thong & Xu (2012) and Cheng, Sharma, Sharma & Kulathunga (2020) studies. One example of an item is *I would pay for a digital service I really liked*.

The measure for the last variable Habit has been based on Talukder et al. (2020), Venkatesh, Thong & Xu (2012) and Cheng, Sharma, Sharma & Kulathunga (2020) studies. The variable concerns if the use of technology has become a habitual behavior that is completed without any type of deliberation beforehand (Venkatesh, Thong & Xu, 2012). This has been shown to be an important predictor for continuous use of technology (Venkatesh, Thong & Xu, 2012). For this study we test this variable in order to understand if the use of digital services has become

a habit for the elderly population in Sweden and if this is significant for their behavioral intention. Thus one item is *The use of digital services has become a habit for me.*

4.5 Pilot study

We chose to conduct a pilot study for our questionnaire in order to test the quality and remove certain errors that could influence the results. By conducting a pilot study we were able to increase the validity and reliability of our study. The pilot study was done by asking a small group of people to complete the survey and give us some constructive criticism on how the items were understood and perceived. We settled with eight pilot participants since according to Wrench, Thomas-Maddox, Richmond and McCroskey (2013) a pilot study should consist of 5-10% of our target sample and as mentioned earlier we need approximately 114 participants for a repeatable sample (8 out of 114 is 7%). The participants of the pilot study found that it took approximately 10-15 minutes to finish the survey, we later used this information for the introduction to prepare the respondents for the necessary time required to complete the questionnaire. The respondents of the pilot study found the items easy to understand with just a few misconceptions of what we meant with certain assertions, these were therefore reformulated for better understanding.

4.6 Method of analysis

This section will explain our method of analysis of the data we gathered and later analysed in SPSS. Considering that we used Google Forms for our questionnaire this implied that we easily could recode our nominal and ordinal variables into numerical data in SPSS. To receive more distinct and reliable results we eliminated all extreme outliers from our data, fortunately we still ended up with more than 114 responses for each of the variables, with a sample varying from 115-117 for each of the items.

Starting off we examined the descriptive statistics of our primary data to discover patterns and detect outliers that might affect our coming data analysis. We analyzed our primary data using both factor analyzes for the constructs and a multiple regression analysis (MRA) in SPSS. The MRA was conducted in order to make use of all our variables and the hypothesis testing. By conducting an MRA we are able to see how much of the dependent variable (BI) is explained by the independent variables (Djurfeldt, Larsson & Stjärnhagen, 2018). Considering that we aim to seek which of the independent variables provides an explanation for the dependent

variable as well as which one is the most prominent we found this data analysis to be the most appropriate. The MRA will compare two components of the variance; first off it examines how much of the total variance is due to the independent variables, this is called the regression, secondly, it comes up with the residual which is the variance that is not explained by the independent variables (Djurfeldt, Larsson & Stjärnhagen, 2018; Pallant, 2003).

Before creating the MRA, we conducted factor analyzes for each of the constructs in order to detect items that did have the satisfactory factor loading for that construct. Factor analysis is a dimension reduction technique used to reduce the data into smaller components or factors (Pallant, 2003). The results from a factor analysis leaves the researcher with how many factors that could be extracted from the data and the various factor loadings for each of the variables (items in this case) (Pallant, 2003). We used confirmatory factor analysis with the aim to confirm that the items in our constructs were appropriately grouped. This was done by conducting a factor analysis for each of the constructs by including all relevant items for that construct and thereafter seeing their standardized item loadings. Chin (1998) suggests that every item with a standardized item loading below 0.5 should be dropped, as it is not correlating to the other items enough. The factor analysis was the first step to ensure internal consistency between our constructs.

The second step to ensure internal consistency and reliability involved discovering each construct's Cronbach's Alpha value. This was done to see how closely related the items for the constructs are (Pallant, 2003). DeVellis (2003) suggests that the Cronbach's Alpha should be above 0.7, however if this is measured on less than ten items it may very well show a lower number. Due to the fact that we had less than ten items for each of our constructs, we found it necessary to present the mean inter-item correlation as well. A low mean inter-item correlation number indicates that the items are not correlated meanwhile a high mean inter-item correlation number would indicate that the items are repetitive (Clark & Watson, 1995; Pallant, 2003). The ideal values for the mean inter-item correlation would be somewhere between 0.15-0.5 (Clark & Watson, 1995; Pallant, 2003), nevertheless a higher value would only indicate more of a correlation between the items. To strengthen the reliability of our analysis we chose to use the factor analyzes, Cronbach's alpha and mean inter-item correlation in combination with each other. After the reliability testing we grouped the separate items into their specific UTAUT2 constructs by creating index variables that were used for the MRA, and dropped the items that posed internal consistency issues.

Moving on to the MRA analysis, first off, we examined the multicollinearity of our analysis, considering that if the independent variables are too closely related this might affect the outcome of the MRA (Pallant, 2003). It is necessary that the constructs are somewhat related to each other but not to an extent where they measure the same variance (Pallant, 2003). Thus, to see if the multicollinearity scores were satisfactory we looked if they had tolerance scores above 0.1 and VIF scores below 10 (Burns & Burns, 2008). One of the most important aspects with the MRA is to see if the model is significant, this can be done by looking at the p-value in the ANOVA table (Pallant, 2003). Next step is to look at the R Square percentage which shows the variance in the dependent variable explained by the independent variables, this is one of the focal points in an MRA (Pallant, 2003). Nevertheless, considering that our data sample is rather small, we have chosen to look at the Adjusted R Square percentage instead since this will give a better representation of our sample (Djurfeldt, Larsson & Stjärnhagen, 2018). Some reports in the social sciences receive Adjusted R Square percentages of just 10%, however the higher the number the better (Djurfeldt, Larsson & Stjärnfeldt, 2018; Pallant, 2003). We looked at the significance level for each of the constructs in the coefficients table to understand if the unique constructs were significant in explaining the variance in the dependent variable behavioral intention (BI). We chose to adhere to the significance level of 0.05, this was used to either reject or confirm our hypotheses. Furthermore, in order to understand which construct provided the greatest unique contribution for BI, we looked at the standardized beta coefficient in the coefficients table, the greater the number the larger the explanation for the dependent variable (Pallant, 2003).

Following this we will also be looking at the Pearson correlations between the independent and dependent variables. It is crucial that all independent variables correlate somewhat with the dependent variable, therefore a score above 0.3 is desirable in addition it is necessary that the independent variables do not correlate to a high degree with each other, thus a correlation value below 0.7 for the independent variables is satisfactory (Pallant, 2003). Lastly, we will look at the two figures: Normal probability plot and the Histogram for the MRA model. The Normal probability plot and Histogram shows to what extent the two datasets (Behavioral intention & UTAUT2 constructs) relate to each other, this is used to discover any skewness of distributed values (Thode, 2002). Normality can be assumed if the dots in the Normal probability plot follow the diagonal line without any major deviating points and if the staples in the histogram follow the normal curve (Pallant, 2003).

4.7 Ethical considerations

There are four foundational ethical principles each researcher should consider and follow, these are no harm to participants, no lack of informed consent, no invasion of privacy and no deception (Bryman, 2012). Considering that our method of data collection is a voluntary online survey we can assume that we have not caused any harm to our participants. The principle of lack of informed consent implies that each participant should get the necessary information to make an informed decision if they would like to participate or not in the study (Bryman, 2012). Complete consent is hard to obtain considering that even minor transgressions can affect the participant or the study (Bryman, 2012), however we adhere to this notion by giving the participants a holistic overview of the study subject and letting the participants freely choose if they would like to participate. In addition, we have declared in the introduction of the survey that participants are encouraged to email us if they have any questions or regards related to the study. The third principle regarding invasion of privacy is related to how much of each participant's personal information we use for the study (Bryman, 2012). Considering that we do not gather any sort of identification, such as name or email, that can lead back to each individual participant we have adhered to the notion of anonymity and confidentiality. Finally the last principle regarding deception is described as researchers deceiving their participants by presenting their works as something other than it is (Bryman, 2012). Considering that we will not gain anything from deceiving our participants regarding what the study is about and our introduction is presented transparently we seek to avoid any type of deception.

Lind (2014), declares participants involved in a study should have the opportunity to exit the questionnaire whenever they want to, have their data and statistics managed respectfully and away from the public. Furthermore, our data collection and study have been strategically planned to ensure integrity, quality and transparency. Our studied subject is viewed as neutral and is not related to any triggering issues which in turn eliminates the idea that the survey will be degrading or violating for the respondents. The introduction of the survey provides the definition of digital services used for this study, this was done to equalize each respondents' understanding of what is meant by digital services. In addition, by asking a confirmation question regarding if the respondents understand what is meant by digital services we were able to ensure that everyone understood the topic and thus the assertions presented.

4.8 Method reflection

The purpose of this study was to understand the elderly consumers perspective on why they use digital services thus the UTAUT2 was an appropriate choice. Nevertheless, the study could have been more comprehensive and extensive by using additional research models in combination with UTAUT2. Furthermore, commonly when using the UTAUT2 framework researcher's would include the moderating variables effect on each of the constructs, however we did not have the resources and time for this extension of the study. Instead, we chose to add two constructs to the main framework: Perceived risk with physical services (PRPS) and Perceived risk with digital services (PRDS) to address our purpose. Although we did experience some issues with the variable considering that the variable had not been developed in previous research and not all of our items correlated to each other. This implied that we had to remove one of the items that did not focus on the same topic and risk as the other items, thus this variable could have been divided into two for better reliability and understanding.

Furthermore, considering that the target group for this research was rather hard to get in touch with via pages online due to their differing habits we obtained a rather small sample. Nevertheless, we managed to get a sample that would be repeatable, but it would have been desirable with a more representative sample covering the older age groups as well as the elderly not as active online. A further remark is the fact that we used convenience sampling for this study and this is without doubt not ideal if one would like to receive generalizable results (Bryman, 2012; Pallant, 2003). However, the goal and aim of this study was to understand swedish elderly people's behavioral intention to use digital services during a pandemic and further the interest in this time period. Thus, we find that this study, even with a convenience sample, serves its purpose of increasing awareness for elderlies' behavioral patterns in relation to digital services that may be used for marketing purposes.

5. Results and Analysis

This section will display the results from the analyzes conducted in SPSS. These include demographics, descriptive statistics, reliability and validity testing, a factor analysis as well as a multiple regression analysis to test our hypotheses. The reliability and validity testing as well as the factor analysis were conducted to ensure that the items used for each construct were reliable and representative for the intended purpose.

5.1 Demographic analysis

Table 1 Demographic characteristics

Demographic characteristics		Frequency	Percentage
Gender	Female	58	49.6
	Male	59	50.4
Age	65-70 years	33	28.2
	71-75 years	39	33.3
	76-80 years	34	29.1
	81-85 years	11	9.4
Total		117	100.0

The demographic statistics show that out of the 117 respondents, 49.6% were female and 50.4% were male which is found to be an exact representation of the Swedish population (SCB, 2020). The age group with the most participants are shown to be the ones between the ages of 71-75 years as these make up 33.3% of the respondents. The respondents aged between 65-70 years old make up 28.2% of the survey population, this is similar to the age group of people born between 76-80 years old that make up 29.1% of the respondents. Finally, the age group with the smallest amount of representation is the one for 81-85 years old with 9.4% of the participants. Since we did not have an upper limit for the age, we do see that we lack some respondents from the older age brackets (above 85 years of age) in order for the sample to be fully representative.

Table 2 Frequency table of experience

Experience		Frequency	Percentage
Use of digital services before the Covid-19 pandemic	Never	4	3.4
	A couple of times a month	20	17.1
	Once a week	24	20.5
	Several times a week	41	35.0
	Daily	28	23.9

Additionally to the gender and age demographics, we gathered data on how often the elderly respondents used digital services before the pandemic to get an insight into their habitual behaviors. The survey options for the use of digital services before the pandemic were as

follows: never, a couple of times a month, once a week, several times a week and daily. As shown in table 2, the majority of the respondents (35%) used digital services several times a week, and the second largest percentage were those who used it daily (23.9%). Thus, the majority of our elderly respondents used digital services often and habitually. There were 17.1% of respondents that answered ‘a couple of times a month’ and 20.5% that answered ‘once a week’. Lastly, the timeoption with the least number of respondents would be ‘never’ with 3.4% of the respondents.

5.2 Descriptive statistics

Table 3 Descriptive statistics

	PRPS	PRDS	PE	EE	SI	HM	PV	HT	BI
Mean	3.794	3.794	3.957	3.337	4.167	3.381	2.888	3.869	4.083
Std. Deviation	1.146	0.823	0.856	1.145	0.762	1.096	0.836	0.785	0.755

Table 3 above shows the descriptive statistics of the mean value and standard deviation for each index variable. We used a Likert scale ranging from 1 - Strongly Disagree to 5 - Strongly agree, with 3 being labelled as Neutral. As seen in table 3, Social influence (SI) and Behavioral Intention (BI) have the highest mean values of 4.167 and 4.083 which would translate into “Slightly agree” on the Likert scale. Considering that the items were formulated as assertions regarding the use of digital services related to the different constructs, this made it possible for the respondents to choose which assertions they agree with more and less. Thus, the participants from our study felt they could agree the most on the assertions related to SI and BI. The constructs with the lowest mean scores are Price value (PV) with a score of 2.888 and Effort expectancy (EE) with a score of 3.337, these mean values approximately represent neutral on the Likert-scale. This implies that these two constructs were the least appealing for our participants. We can also see that EE and Perceived risk with physical services (PRPS) had the highest standard deviation with scores of 1.145 and 1.146, this shows a larger spread of the responses on these items. Thus, the respondents answered highly heterogeneously on these items, nevertheless the standard deviation scores are quite similar among all constructs with values ranging from 0.755 to 1.146. The constructs with the lowest standard deviations are the same as for the ones with high mean values, namely, SI and BI. Hence, SI and BI both have rather conformed answers among the respondents and the respondents find these constructs as

most agreeable. The mean values range between 3.337 to 4.167 which is quite the short range considering we had a scale on 1-5, it is also a bit skewed more towards the 'agree side' of the Likert scale. As for the constructs with high mean values, this may have caused a ceiling effect that may have impacted our regression analysis since the variance is not measured after a certain level (Garin, 2014).

5.3 Factor analysis

Table 4 Factor Analysis

Constructs, items and item wording	Standardized item loading
Factor Analysis	
Perceived risk with Physical services	
PRPS-1: I do not want to leave the house because of the risk of getting infected by Covid-19	0.804
PRPS-2: I am scared about getting infected by Covid-19 pandemic	0.825
PRPS-3: I use digital services to avoid being infected by the Covid-19 virus	0.822
PRPS-4: I am scared that i will fall behind the digital developments if I keep using physical services	0.483 (Dropped)
Perceived risk with Digital services	
PRDS-1: I find using digital services could expose me to scamming	0.826
PRDS-2: I find using digital services could reduce my verification ability	0.723
PRDS-3: I find that digital services could expose me to identity theft	0.827
PRDS-4: I find that there is a risk when paying in advance while using digital services	0.726
PRDS-5: I find there is a risk concerning my digital literacy while using digital services	0.720
Performance Expectancy	
PE-1: I find digital services useful in my daily life	0.808
PE-2: Using digital services improves my independency	0.868
PE-3: Using digital services improves my productivity	0.853
PE-4: Using digital services saves me time	0.883
Effort Expectancy	
EE-1: Learning how to use digital services is easy for me	0.946
EE-2: I find digital services easy to use	0.949
EE-3: It is easy for me to become skillful in using digital services	0.962
EE-4: My interaction with digital services is clear and understandable	0.926
Social Influence	
SI-1: People who are important to me think I should use digital services	0.868
SI-2: People who influence my behaviour think I should use digital services	0.881
SI-3: The majority of my friends and family use digital services	0.774
SI-4: It is expected of me to use digital services	0.696
Hedonic Motivation	
HM-1: Using digital services is fun	0.943
HM-2: Using digital services is enjoyable	0.939
HM-3: Using digital services is entertaining	0.916
Price Value	
PV-1: I use digital services because they are free of charge	0.730
PV-2: I would pay for a digital service I really like	0.686
PV-3: I find digital services more valuable than physical services	0.817
Habit	
HT-1: The use of digital services have become a habit for me	0.785
HT-2: I always use the same digital services	0.668
HT-3: I'm required to use digital services daily	0.832

By conducting factor analysis for each of the constructs, we were able to declare that our model was reliable. The recommendation for standardized factor loading is a value above 0.5, thus PRPS-4 was dropped. All other items showed factor loadings of over 0.5, which implies that the convergence in the construct was satisfactory. The factor analysis shows that our constructs are reliable and represent the same latent construct. Considering that UTAUT2 is a well-established and used theoretical framework for studies similar to ours, our main aim with this factor analysis was to discover the reliability of our items, especially for our two added constructs PRPS and PRDS. This shows that the only item we needed to remove for better internal consistency was the last item for PRPS: *I am scared that I will fall behind the digital developments if I keep using physical services*. Considering that this item is not directly related to the Covid-19 pandemic as the other items in the PRPS construct this could be a reason for the low factor loading.

5.4 Reliability and Validity

Table 5 Reliability testing: Cronbach's Alpha & Mean inter-item correlation

Constructs	Cronbach's Alpha, α	Mean Inter-item correlation	No. of items
Perceived risk with Physical services	0.781	0.545	3
Perceived risk with Digital services	0.823	0.483	5
Performance Expectancy	0.874	0.637	4
Effort Expectancy	0.961	0.859	4
Social Influence	0.821	0.533	4
Hedonic Motivation	0.925	0.804	3
Price Value	0.593	0.333	3
Habit	0.635	0.364	3
Behavioral Intention	0.846	0.531	5
			Total items: 34

Further reliability testing was conducted before creating the index variables to ensure that the Cronbach's alpha scores were satisfactory, implying that the items measure the same construct and idea. As mentioned in the methodology chapter, we seek to have a Cronbach's Alpha score above 0.7. PE, EE, SI, HM, PRPS, PRDS and BI all have satisfactory Cronbach's Alpha scores above 0.7. However, PV scored 0.593 for Cronbach's alpha and this number was not possible to improve by removing one of the items, the same goes for HT that scored 0.635 for Cronbach's Alpha. As mentioned earlier, the Cronbach's alpha score may suffer due to an inadequate number of items for the index. This was expected since all our constructs only incorporate 3-5 items and a more satisfactory score would come from at least 10 items. We

have for this reason chosen to present the mean inter-item correlation scores for each of the constructs, the mean inter-item correlation should be between 0.15-0.5 to not be too repetitive. As we can see in table 5 above, the score for PV is 0.333 and for HT 0.364 which is satisfactory, this shows that the constructs are similar but not highly repetitive. However for every other construct except PRDS, the mean inter-item correlation suggests that the items for the constructs are highly repetitive, this could be expected due to the items being very similar in wording and ideas. Nevertheless, the items were constructed from previous research which increases validity. We see PE, EE, SI, HM, PRPS, PRDS and BI as reliable constructs due to their Cronbach's alpha values. In addition, we see PV and HT as reliable due to their mean inter-item correlations. Furthermore, item PRPS-4 that were shown to have an unsatisfactory factor loading in chapter 5.3 were dropped before the Cronbach's alpha testing and index creation. We would have preferred if both the Cronbach's alpha and the mean inter-item correlation values would be satisfactory for all constructs, however due to the relatively small sample size and constructs with less than ten items this was expected.

5.5 Multiple regression analysis

A multiple regression analysis (MRA) was conducted in order to determine whether we could reject or support our hypotheses.

5.5.1 ANOVA

Table 6 ANOVA Results

ANOVA

Model		Sum of squares	Sig.
1	Regression	27.386	0.000 (<0.0005)
	Residual	20.161	
	Total	47.547	

For the MRA we start by looking at the significance value of the model of using BI as a dependent variable and PE, EE, SI, HM, PV, HT, PRPS and PRDS as independent variables. The SPSS output in table 6 ANOVA results shows that our MRA is highly significant with a p-value of 0.000 (<0.0005), this makes for a useful and reliable model.

5.5.2 Adjusted R square

Table 7 Model summary & Adjusted R Square results

Model summary			
Model	R	R Square	Adjusted R Square
1	0.759	0.576	0.542

The model summary shows how much of the variance for BI is explained by the independent variables (PE, EE, SI, HM, PV, HT, PRPS and PRDS). We look at the R Square (57.6%) to see how much of the variance in the dependent variable is explained by the independent variables. However, considering that we used a rather small sample size of 117 respondents we chose to look at the adjusted R square for a better estimation, as seen above in table 7 this came to 54.2%. The percentage of 54.2% is a respectable value for studies in the social sciences.

5.5.3 Multicollinearity statistics

Table 8 Multicollinearity statistics

Multicollinearity statistics		
Constructs	Multicollinearity statistics	
	Tolerance	VIF
Perceived risk with Physical Services	0.620	1.613
Perceived risk with Digital services	0.774	1.293
Performance Expectancy	0.345	2.901
Effort Expectancy	0.352	2.837
Social Influence	0.553	1.807
Hedonic Motivation	0.425	2.353
Price Value	0.661	1.513
Habit	0.693	1.443

The multicollinearity statistics show that all constructs have tolerance values above 0.1 and VIF values below 10, this implies that our constructs are not too similar to each other. As mentioned in the method section, it is essential for a good MRA to have independent variables that are somewhat related to each other but not to a too high extent since that can imply that they measure the same variance.

5.5.4 Pearson correlation

Table 9 Pearson correlations

Pearson Correlation								
Variable	BI	PRPS	PRDS	PE	EE	SI	HM	PV
PRPS	-0.024							
PRDS	0.178	0.315						
PE	0.477	0.002	-0.193					
EE	0.283	-0.243	-0.245	0.697				
SI	0.638	0.115	0.376	0.396	0.167			
HM	0.414	-0.146	-0.137	0.618	0.683	0.296		
PV	0.301	0.012	-0.137	0.368	0.419	0.292	0.518	
HT	0.583	0.096	0.106	0.474	0.355	0.394	0.397	0.241

Table 9 regarding the Pearson correlations show results indicating that all original constructs of the UTAUT2 (PE, EE, SI, HM, PV and HT) correlate somewhat with the dependent variable with values above 0.3. However our added constructs PRPS and PRDS show correlation values of 0.178 and -0.024 which is less than the desire. This can be due to the fact that these two constructs have not undergone the same amount of developments and testing as the original constructs. Furthermore, since none of the independent variables correlation with each other have a value above 0.7, we find that none of the independent variables correlate too much which would imply that they measure the same factor. These results for the Pearson correlation table indicate that all constructs are available for a joined MRA, nevertheless, a higher correlation value between BI and PRPS and PRDS would have been desirable.

5.5.5 Normal probability plot

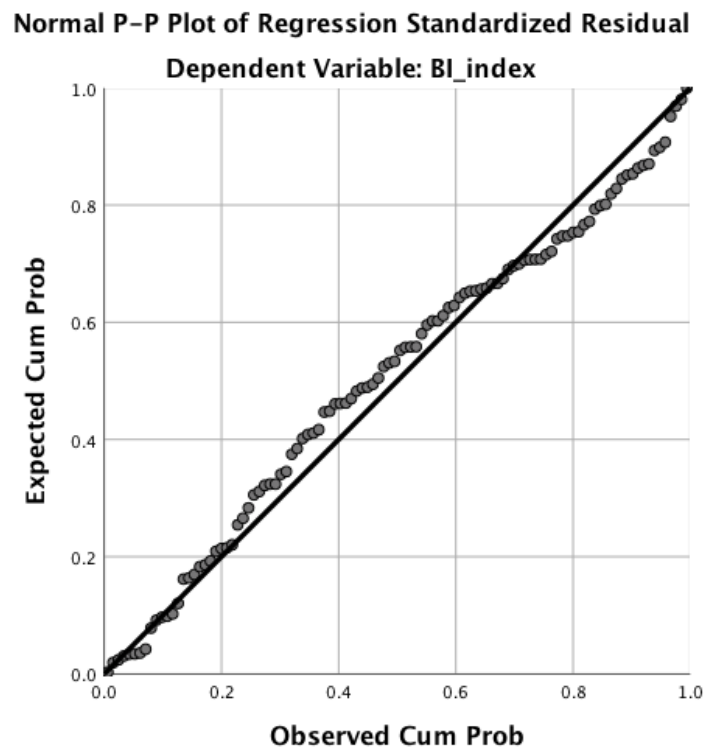


Figure 2 Normal P-P Plot of Regression Standardized Residual

Figure 2 shows us that the Normal P-P plot of regression does not show any major deviating points from normality since the dots follow the diagonal line relatively well. This implies that there are no major issues and deviations that may impact our analysis and result.

5.5.6 Histogram

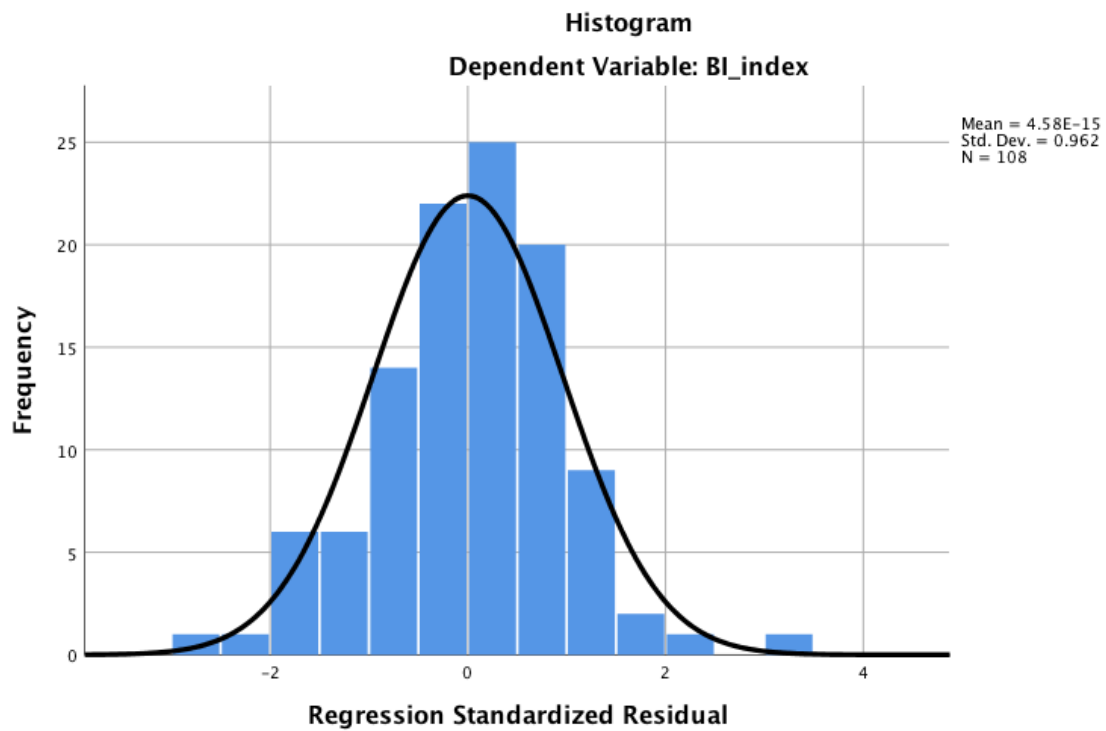


Figure 3 Histogram of Regression Standardized Residual

Figure 3 showing the MRA histogram shows that the results follow the normal curve to a satisfactory amount considering that the staples are not skewed towards any side indicating a larger standard deviation. This implies that we can accept normality assumptions.

5.7 Hypothesis testing

Table 10 Hypotheses with abbreviations

Hypotheses	Abbreviation
Perceived risk of using physical services has a significant influence on the behavioral intention to use digital services	H1
Perceived risk of using digital services has a significant influence on the behavioral intention to use digital services	H2
Performance expectancy has a significant influence on the behavioral intention to use digital services	H3
Effort expectancy has a significant influence on the behavioral intention to use digital services	H4
Social influence has a significant influence on the behavioral intention to use digital services	H5
Hedonic motivation has a significant influence on the behavioral intention to use digital services	H6
Price value has a significant influence on the behavioral intention to use digital services	H7
Habit has a significant influence on the behavioral intention to use digital services	H8

Table 10 above shows all our hypotheses connected with their abbreviations. Out of the eight hypotheses we were able to confirm two of them, hypothesis H5 and H8. Hypothesis H5 is *Social influence has a significant influence on the behavioral intention to use digital services* and hypothesis H8 is *Habit has a significant influence on the behavioral intention to use digital services*. As can be seen in table 11 below, the hypotheses H1, H2, H3, H4, H6 and H7 are not supported since we adhered to the significance level of 95%. Table 11 shows the direct effect between the independent variables and the dependent variable BI, the standardized beta coefficient, the p-value and if the hypotheses were either supported or not supported. SI (p: 0.000) and HT (p: 0.000) both had p-values below 0.05, thus making them significant for swedish elderlies' behavioral intention to use digital services, hence H5 and H8 was supported. PRPS (p: 0.057) had a p-value of just above the threshold of 0.05, nevertheless H1 was not supported, however looking at the low p-value it is prominent that PRPS does explain some of the variance in the dependent variable. PRDS (p: 0.507), PE (p: 0.096) and EE (p: 0.171) all proved to be insignificant for the behavioral intention to use digital services, hence H2, H3 and H4 were not supported. HM (p: 0.288) and PV (p: 0.538) did not show any significant influence on BI, thus H6 and H7 were not supported.

Table 11 Overview of hypothesis testing with direct effect

Hypotheses	Effect	Beta	Sig.	Decision
H1	PRPS → BI	-0.143	0.057	Non-supported
H2	PRDS → BI	0.055	0.507	Non-supported
H3	PE → BI	0.187	0.096	Non-supported
H4	EE → BI	-0.152	0.171	Non-supported
H5	SI → BI	0.403	0.000	Supported
H6	HM → BI	0.107	0.288	Non-supported
H7	PV → BI	0.050	0.538	Non-supported
H8	HT → BI	0.343	0.000	Supported

Table 11 shows the results from the coefficients table from the MRA with BI as the independent variable. We used the significance level of 0.05, thus as visible in the table above only SI (0.000) and HT (0.000) met this significance level. This implies that SI and HT are significant for the explanation of BI, with SI being the stronger contributor to the explanation with a beta score of (0.403). Nevertheless, if we would have adhered to a significance level of 0.1 both variables PE (0.096) and PRPS (0.057) would show an explanation to the dependent variable BI. Nevertheless, this would increase the chances of misleading results, but as shown in table 8 PRPS significance value is directly over the 0.05 threshold, indicating somewhat of an explanation for BI that should not go omitted. The beta score for PRPS (-0.143) shows that the variable PRPS has an inverse relationship with BI, implying that an increase in the dependent variable (PRPS) would lead to a decrease in the dependent variable (BI). Furthermore, the constructs EE, HM, PV and PRDS do not show any significant explanation for BI since they all have p-values over both 0.05 and 0.1.

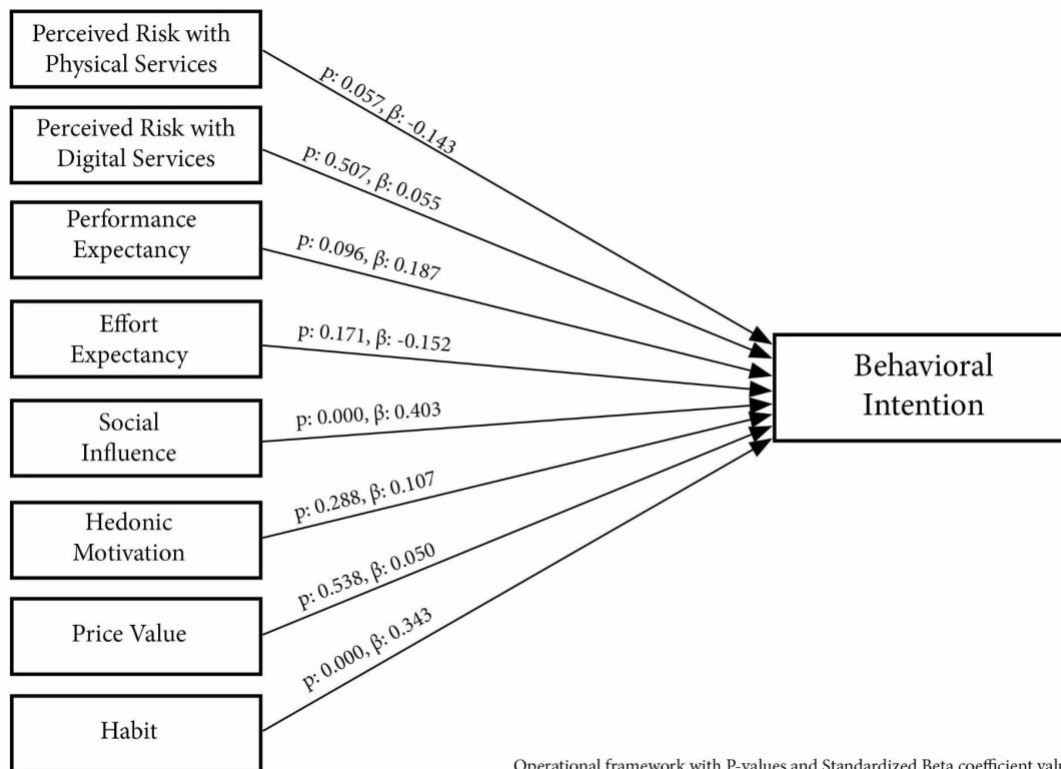


Figure 4 UTAUT2 Framework with MRA results: P-values and Standardized Beta Coefficients

6. Discussion

In this section, the results from the SPSS analysis will be discussed in relation to the theoretical framework.

The main purpose of this study was to examine elderlies' usage of digital services in the context of a global pandemic where they are recommended but not urged to keep physical distance. This was done by using a modified UTAUT2 model, where constructs were hypothesized to have a significant influence on elderlies' behavioral intention (BI) to use digital services. Based on existing literature regarding technology acceptance, risks associated with elderlies and Covid-19 and the uniqueness of services, constructs were formulated and adapted to fit the Swedish Covid-19 context where soft recommendations of physical distancing apply. The constructs that were analyzed were perceived risk of using physical services (PRPS), perceived risk of using digital services (PRDS), performance expectancy (PE), effort expectancy (EE), social influence (SI), hedonic motivation (HM), price value (PV) and habit (HT). Through

multiple regression analysis (MRA), these constructs were used as independent variables with BI as the dependent variable.

Results from the MRA show that SI and HT have a significant influence on elderlies' BI to use digital services in the context of soft recommendations during the Covid-19 pandemic. This implies that a change in one or both of these constructs will result in a change in BI. At a significant level of 0.05, none of the other constructs have a significant relationship with BI. However, by lowering the confidence interval and increasing the significance level to 0.1, we could conclude that the coefficient for both PRPS and PE are different from zero (Hair Jr, Black, Babin & Andersen, 2009), meaning that a change in those constructs will affect BI. Lowering the confidence interval will increase the chance of being wrong and the decision depends on the chance one is willing to take (Hair Jr et al., 2009). As Hazelrigg (2009) stated, nothing is sacrosanct or magical about significant levels, they are typically based on a value that is acceptable for the researcher and the audience. As for this current study, hypotheses of significant relationship between PRPS and BI as well as between PE and BI are rejected but by following the continuous discussion, readers may draw their own conclusions based on their level of acceptance.

SI is shown to be the strongest predictor of elderlies BI to use digital services during the pandemic in the Swedish context, which is in line with earlier research on elderlies' technology acceptance (Niehaves & Plattfaut, 2014; Lian & Yen, 2014). SI also shows the highest mean value of all the analyzed constructs (4.167), indicating that many respondents are experiencing social pressure and/or a desire to gain social status related to the use of digital service. The influence of SI on BI is confirmed by the associated probability from the MRA and as predicted, the intention among Swedish elderlies to use digital services is significantly affected by their social surroundings. This becomes particularly evident in the context of a pandemic where changed norms and prompts are likely to influence people's behaviours. Since elderlies are more vulnerable to the Covid-19 virus, they have been recommended by the Swedish government to limit their close contacts and avoid crowded spaces. In addition, there may be concerns among friends and families regarding the health of the elderly. The results show that the social pressure to stay at home is likely to have influenced their BI to use digital services during the pandemic.

The significant relationship between HT and BI implies that the elderly who perform digital services on a regular basis are more likely to use them. Descriptive statistics show a high mean

value for HT (3.869), with quite low standard deviation (0.785), indicating that many respondents have turned digital services into a habit. Additionally, over 50 percent of the respondents stated that they used digital services at least several times a week prior to the pandemic, which reveals an already habitual behavior. Meanwhile, EE has the lowest mean value of all constructs (3.337), indicating that the respondents still experience some resistance towards using digital services. This is in line with Göthberg and Englund (2020) study, where they discovered that even though many elderlies feel unfamiliar using digital services, most of them still use them on a daily basis. Since habits are performed without extra consideration (Verplanken et al., 1994) the use of digital services may come naturally and the discrepancy between elderlies believed ability and actual habit could be due to them being used to being excluded from the digital world as shown by Blažič's and Blažič'(2020).

Interestingly, PRPS shows no significant influence on BI despite the obvious risks associated with physical contact during the pandemic. This may be due to the way in which the questions were asked to the respondents, as people may care more about the potential risk of infecting others rather than perceived risk of self being infected. However, the associated probability (0.057) is close to be significant at the significance level of 0.05 and hence we cannot completely ignore its potential influence on elderlies' BI in this context. What is surprising is that the beta coefficient shows an inverse relationship with BI, which implies that a higher perceived risk of using physical services will decrease elderlies' usage of digital services. The elderlies' who did not intend to use digital services were also experiencing the highest perceived risks of using physical services. This is in contradiction to previous studies, such as Raza, Qazi, Khan and Salam (2020) who argue that since digital services reduce the chance of being infected with the Covid-19 virus, it may positively influence their intention to use them. The results from this current study imply that the perceived risks aimed towards oneself regarding the use of physical services does not influence elderlies' BI to use digital services instead.

The influence of PRDS that was identified from previous literature (Kim, Xu & Gupta, 2012; Lian and Yen, 2014; Datta, Bhatia, Noll & Dixit, 2018; Guner & Acarturk, 2020; Ma, Chan & Teh, 2021) does not show any significant relationship with elderlies' BI in this study. This could be explained by the high level of habitual usage among the respondents as well as the high internet user rates among elderlies' in Sweden. This is in line with the findings by Merhi, Hone and Tarhini (2019), stating that the higher trust one has for a technology the less risk one experiences when using it.

PE does not show any significant relationship with BI, meaning that the usefulness of digital services have little or no influence in elderlies' intention to use them. This was also surprising, since PE has been declared to be the strongest predictor regarding technology acceptance in general (Venkatesh et al., 2003) and among elderlies' in particular (Ma, Chan & Teh, 2021). Perhaps the pandemic has encouraged elderlies to use digital services despite lack of knowledge regarding their potential benefits or personal meanings, and their real usefulness is yet to be acknowledged. However, the potential influence of PE on elderlies' BI may not be excluded in regards to its associated probability (0.096) in this analysis.

EE does not show any significant relationship with elderlies' BI, which implies that their intention to use digital services is not affected by the ease of use. Even if some respondents are experiencing difficulties regarding the use of digital services, it does not significantly affect their intentions. This is an indication that some elderlies' who may feel resistance towards using digital services, still intend to use them. Perhaps the potential benefits that have been revealed during the pandemic have made them realise the importance of learning how to use digital services.

Unlike previous studies (Macedo, 2017; Talukder et al., 2020), HM shows no significant influence on elderlies' BI. Since HM is related to the fun and enjoyment that comes with usage, it may not be the primary reason for using digital services during the pandemic where users may prioritize more towards the basic needs as suggested by Loxton et al. (2020). Another potential reason for PV to be insignificant could be due to the discrepancy between the respondents belief of fun and enjoyment and the thought of e-banking, e-shopping and e-health. Using such services may be more related to necessity rather than entertainment.

The insignificance of PV is in contradiction to previous studies, as cost saving has shown to be one of the most important factors when using digital shopping services (Tak & Panwar, 2017) and consumers have proven to be more likely to adopt a service with a reasonable price (Merhi, Hone & Tarhini, 2019). One potential reason for PV to be insignificant in this context is that prices are approximately the same for both physical and digital services (Dagens samhälle, 2019), making PV a less important factor in the decision making process between the two. As opposed to products, a digital service option usually does not differ much from a more traditional alternative which may explain why PV does not significantly relate with the use of digital services in this study.

7. Conclusion

This section will present this study's conclusions, the managerial and theoretical contributions and suggestions for further research.

In Sweden, where soft Covid-19 restrictions apply, elderlies' BI to use digital services are actually influenced by pressure from their social surroundings and habitual behaviour, rather than the obvious risks associated with the use of the physical alternative. The increased usage of e-banking, e-shopping and e-health among the retired population during the pandemic is not primary due to the avoidance of physical services where people could be exposed to the virus, but to governmental recommendations and behavioural influence from people in their close proximity as well as their user habits. Although the associated probability of PRPS and PE indicated a potential relationship with BI, the hypothesis of significant relationships is rejected at the current confidence level of 95%.

One reason why elderlies' perceived risk of using physical service does not show any influence on their intention to use digital services in this study may be that the pandemic has raised concerns above personal safety since the pandemic is a threat towards whole nations. Questions about elderlies' perceived risk of using physical services in the context of Covid-19 were asked with their personal safety in mind, not aimed towards the perceived risks one may expose others to. The Swedish Covid-19 strategy has emphasized a collective responsibility through individual effort and hence, the use of digital services is not a self-protective behavior, but an act of solidarity.

Factors that have shown to have significant influence on elderlies' BI to use technology in prior studies, namely PRDS, EE, HM and PV does not have any significant relationship with their BI to use digital services in the Swedish Covid-19 context. The insignificance of PRDS and EE are likely explained by the high internet user rates among elderlies' in Sweden where digital services are widely used and hence the trust towards them is high. A potential reason for HM to be insignificantly related to elderlies' BI in this context is that the Covid-19 pandemic raises concerns regarding one's basic needs of health and safety, making psychological needs such as fun and enjoyment less important. PV may be insignificant due to the uniqueness of services, as prices are approximately the same for both digital and physical services and becomes less important in the choice between the two.

7.1 Theoretical implications

This study will contribute to the existing literature within technology acceptance, regarding elderlies' use of digital services and the effects of the Covid-19 pandemic. This research is aimed to understand elderlies' behavioral intentions to use digital services during a pandemic and to develop this research field for awareness and interest. We do see our research as unique in its purpose as there is little or no other previous research that has examined the effect a pandemic had on digital services usage among Swedish elderlies, and which factors that will influence their behavioral intention to use such services under these circumstances. Thus, the theoretical implications obtained from this study is that although the topic of elderlies' technology acceptance is extensive, it has not yet been discovered what effect the Covid-19 pandemic may have had on this.

Findings confirms the use of the UTAUT2 framework in this context, however, only social influence (SI) and habit (HT) turned out to have a significant influence on elderlies' behavioural intention (BI) to use digital services. The significance of SI, a construct that was formulated in the original UTAUT model by Venkatesh et al. (2003), is in line with previous studies and adds to the understanding of its relationship with technology usage. The construct of HT, that later was included in the UTAUT2 model developed by Venkatesh, Thong and Xu (2012), showed a significant relationship with BI in this study as well which also is in line with the existing research. The fact that none of the other constructs included in the UTAUT2 turned out to be significant in this analysis, indicates that neither performance expectancy, effort expectancy, hedonic motivation or price value will influence elderlies' BI to use digital services in the studied context.

The concept of perceived risks examined in this study, is found to have no significant relationship with BI, neither the perceived risks of using digital services, nor the perceived risks of using the corresponding physical alternative. Hence, the intention to use protective technology as a response to threat appraisal factors that has been found in previous literature, based on the protection motivation theory (Rogers, 1975), is not applicable on elderlies' BI to use digital services in this context. However, the associated probability of the construct Perceived risk of using physical service was rather close to be significant at a 95% confidence

level, indicating that the perceived risks associated with the use of a corresponding physical alternative have potential to be investigated further within technology acceptance research.

The findings in this study also add to the existing technology acceptance research aimed towards services, which is less extensive compared to products. By reviewing the uniqueness of services, the significance of SI and HT could be explained. Prior research has found that services are highly dependent on its reputation, and customers are hence prone to be influenced by the opinions of their social surroundings before usage. In addition, digitalization of physical services requires a change in peoples' way of doing things, and the value that is being co-created in the service process needs to be perceived higher in order for customers to shift from physical to digital options. This is both a challenge and an opportunity that needs to be further addressed, and the findings from this study confirms its relevance.

7.2 Managerial implications

As for the managerial implications derived from this study, the results made it clear that the construct of social influence provided the largest explanation for elderlies' behavioral intention to use digital services. Thus, this implies that similarly to other demographics elderly are also highly impacted by influencers and people in their close proximity. In turn this means that word-of-mouth communication is very appropriate for the elderly consumers and may be highly effective for marketing digital services to elderly people. Marketers may use this implication to conduct marketing to elderly people using influencers or spreading the message through their social groups using personalized communication. Furthermore, we found that habit is also significant for elderlies' behavioral intention to use digital services. Thus, this implication can be applied by marketers and people creating digital services to ensure that the specific digital service is easy to use on a daily basis. In addition, this can be applied by ensuring that the benefits of using some digital service trumps the ones of using the physical one, in order to transform the elderlies' habits. This may be applied by developing loyalty programs that will make the elderly feel cherished and that will encourage them to use the service daily by receiving something in return.

Moreover, considering that the results showed that hedonic motivation and price value is not in focus for elderly when using digital services, this may be reduced in marketing as unique selling points (USP). Thus, since neither the price of the fun of using digital services are particularly important for elderly to use digital services, marketers should therefore reconsider

how they market their benefits and USP:s for best effect. Another construct that did not show any significant impact on the behavioral intention was effort expectancy, the ease of using digital services. This may be due to the fact that edlerly do not find digital services easy enough to use and are therefore not a reason for why they use digital services. This implication can be addressed by making digital services more user friendly for elderly people and as mentioned in the literature review most digital services are not designed with the elderly in mind. By making the digital services more user friendly for the older age group owners of digital services may increase their target group extensively.

7.3 Limitations and future research

This study has its limitations, which are important to acknowledge as it may have affected the outcome and could lead the way for more in depth studies within this field of research. The limitations presented in this section are especially regarding the survey design and its implication. Firstly, the questions about the respondents' perceived risks of using physical services were asked from their perspective of their own personal risks, without touching on the potential risks one may expose others to while using physical services in the context of Covid-19. If additional questions were asked about the perceived risks associated with the use of physical services and its impact on others, results may have turned out differently and its influence on elderlies' behavioral intention to use digital services could have been analyzed further. Secondly, the Covid-19 situation has limited the options for contacting study objects with regards to physical restrictions. Because of this, the survey was conducted digitally which may have affected both reach and the level of digital experience among respondents. This could have been mitigated by contacting respondents by phone, but due to the limited amount of time and resources during this study project it was not a preferable option. This is connected to a third limitation of this study, which is the sample size. Despite fulfilling our desirable level of respondents, the size of the sample is rather small and may also have affected the results and conclusions made.

For future research in this particular field, we suggest further examination of the perceived risks associated with the use of physical services in the context of a global pandemic where virus is transmitted through close contact with other people. By expanding the scope to include perceived risks aimed towards others and not just towards oneself may result in different findings which could lead to opposite or more developed conclusions about its influence on elderlies' behavioral intention to use digital services instead of physical. We also suggest a

larger sample size, to represent a wider and more representative sample of elderies in Sweden in order to draw more generalized conclusions. In addition, a combination of quantitative and qualitative study methods could give a more nuanced picture of elderlies attitudes and behaviours which would increase understanding and result in even more informed decisions for marketing purposes.

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Appendix A

Survey presentation

Hej och välkommen till denna enkät om digitala tjänster!

Vi är två studenter från Lunds Universitet som just nu jobbar på vår masteruppsats i Internationell marknadsföring och varumärkeshantering. I vårt arbete undersöker vi de främsta anledningarna till varför ni använder digitala tjänster och även riskerna med dem.

Enkäten är till för att vi ska ta reda på vilka faktorer är mest betydande för er fortsatta användning av digitala tjänster. Vår enkät är endast tillämplig på personer som är 65 år eller äldre.

De digitala tjänster relevanta för denna enkät är tjänster relaterade till hälsa, bankärenden och shopping. När vi skriver digitala tjänster syftar vi till de digitala tjänster ni använder för att boka tid och prata med vården (Kry och 1177 etc.), digitala tjänster för era bankärenden (bankappar, bankID och Swish etc.) och slutligen de digitala tjänster ni använder för shopping både för mat och kläder (Mathem, Zalando och Foodora etc.).

Vi vill gärna tacka er på förhand för ni deltar i den här undersökningen och hjälper oss med vårt arbete. Enkäten kommer ta cirka 10-15 minuter att slutföra och innehåller 39 påståenden vi ber er att svara på. Om ni har några som helst funderingar eller frågor gällande enkäten så är det bara att höra av sig till Rebecka eller Therese.

Vänliga hälsningar,

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