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**Adoption and Usability of Online Pharmacies for Purchasing
Prescription Medicines**

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Lappeenranta 2015

ABSTRACT

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Title: Adoption and Usability of Online Pharmacies for Purchasing Prescription Medicine
School: School of Business and Management
Master's program: International Marketing Management
Year: 2015
Master's Thesis: Lappeenranta University of Technology
98 pages, 5 figures, 1 table, 1 appendix
Examiners: Prof. Sanna-Katriina Asikainen
Prof. Sami Saarenketo
Keywords: Information system adoption, usability, online store, online pharmacy

The study examines customers' perceptions of purchasing prescription medicine from online pharmacies. The main purpose is to find determinants affecting the adoption of online pharmacies, and to consider the role of usability in the adoption process. The theoretical part of the paper provides the overlook on adoption constructs and their relations. In addition, usability factors used in prior studies are presented, as well as how they have been connected to IS adoption research. The specialties of Finnish pharmacy business and the requirements set to online pharmacies are also discussed.

The empirical part of the study is conducted with the qualitative approach. Four respondents were interviewed and observed while they tried online pharmacies. The data gathered indicates respondents' initial beliefs toward the service, perceptions of the usability, and the changes in the perceptions and beliefs after using online pharmacies.

The results indicate that usability factors and adoption determinants are interrelated. Usability influences perceived ease of use, which affects both perceived usefulness and behavioral intention. Regulations restrict the design of online pharmacies, which has affect on the both the perceived ease of use and perceived usefulness, and thus the whole adoption process.

TIIVISTELMÄ

Tekijä:	Suvi Hannula
Tutkielman nimi:	Adoption and Usability of Online Pharmacies for Purchasing Prescription Medicine
Yksikkö:	School of Business and Management
Koulutusohjelma:	Master's Programme in International Marketing Management
Vuosi:	2015
Pro gradu:	Lappeenrannan teknillinen yliopisto 98 sivua, 5 kaavioa, 1 taulukko, 1 liite
Tarkastajat:	Prof. Sanna-Katriina Asikainen Prof. Sami Saarenketo
Hakusanat:	Teknologian omaksuminen, käytettävyys, verkkoapteekki, verkkokauppa

Tutkimus tarkastelee asiakkaiden käsityksiä reseptilääkkeiden ostamisesta apteekki-verkkokaupoista. Tutkimuksen tavoitteena on löytää omaksumiseen vaikuttavia tekijöitä, sekä selvittää käytettävyyden roolia omaksumisprosessissa. Teoriaosuus käsittelee omaksumiseen vaikuttavia tekijöitä sekä eri teorioita niiden keskinäisistä suhteista. Lisäksi esitellään aikaisemmissa tutkimuksissa esiteltyjä käytettävyyteen vaikuttavia tekijöitä sekä sitä, kuinka näitä tekijöitä on liitetty tietotekniikan omaksumista koskeviin teorioihin. Teoriaosuus myös tarjoaa katsauksen suomalaisen apteekkiliiketoiminnan erityispiirteisiin sekä apteekki-verkkokauppoihin kohdistuviin rajoituksiin.

Empiirinen tutkimus on toteutettu laadullisella tutkimusotteella. Tutkimukseen haastateltiin neljää tutkittavaa, ja lisäksi tehtiin havaintoja heidän kokeillessaan reseptilääkkeiden ostamista apteekki-verkkokaupoista. Saatu aineisto ilmaisi tutkittavien etukäteisuskomuksia, käsityksiä käytettävyydestä sekä palvelun kokeilun aikana syntyneitä muutoksia käsityksissä ja uskomuksissa. Tutkimuksen tulokset osoittavat, että käytettävyys- ja omaksumistekijät liittyvät toisiinsa. Käytettävyys vaikuttaa koettuun helppokäyttöisyyteen, joka puolestaan vaikuttaa koettuihin hyötyihin ja aikomukseen. Säännökset rajoittavat apteekki-verkkokauppojen käyttöliittymää, mikä vaikuttaa kokemukseen helppokäyttöisyydestä ja hyödyllisyydestä, ja näin ollen myös omaksumisprosessiin kokonaisuutena.

ABBREVIATIONS

EDT	Expectation Disconfirmation Theory
Fimea	Finnish Medicines Agency
IS	Information System
TAM	Technology Acceptance Model
TPB	Theory of Planned Behavior
TRA	Theory of Reasoned Action
UTAUT	Unified Theory of Acceptance and Use of Technology

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1 INTRODUCTION

Electronic commerce is relatively young method of trade but it is currently popular and fast growing international phenomenon that cannot be overlooked in any branch of business. In Finland the value of the business to consumer e-commerce is over 10 billion Euros per year, and it covers an 8 percent share of the whole retail trade. The share of e-commerce is constantly growing, while traditional brick-and-mortar commerce is expected to decline. (TNS Gallup 2015)

Over the past decade there has been big changes in Finnish pharmacies. The decrease in the prices of the prescription medicines, caused by generic substitution and reference price system, has drastically affected the pharmacies' economics. Especially turnover per package and margin for prescription medicines have decreased since 2009. This has caused that some pharmacies struggle with their profitability. The biggest costs for pharmacies consist of purchases, pharmacy fee paid for the government, rents and human resources. It is not possible to decrease purchases, as discounts are not allowed. Since customer and prescription volumes are increasing, cutting down human resources is difficult as well. (AFP 2012) E-commerce offers an opportunity for pharmacies to cut down costs, since serving customers online does not need as much human resources as face-to-face service in a brick-and-mortar store.

Trade of medicines is strictly regulated, which sets demands for online pharmacies and especially for selling prescription medicines online. Because of these demands, the purchase process and the online store architecture differ from the regular online stores, which may also have an effect on customer's adoption and willingness to use the online channel. Furthermore, due to the differences, the adoption research focused on e-commerce may not be applicable as such for online pharmacies, particularly in the context of selling medicine and prescription medicines.

1.1 Research Objectives

The study empirically examines and pursues to develop better understanding on the adoption and future usage intention of online pharmacies for purchasing prescription medicines. The aim is to examine the relation of information system adoption and system usability. In addition, the objective of this study is to apply IS adoption theories in the context of strictly regulated e-commerce that has unique specialties due to the legislation, and thus do not fit into the findings of the previous study. The study examines the continuance intention instead of focusing just on initial adoption, since retaining customers is important and can be less expensive than attracting new ones (Gefen, Karahanna & Straub 2003; Choi, Kim & Kim 2011; Bhattacharjee 2001).

The focus of the study is mainly on the role of usability of the service. The adoption and continuance intention of information systems and websites are widely studied and complex phenomena but research connecting them with the usability factors of a website is still limited. IS adoption study offers only general lines for developing websites, whereas usability study provides more specific details for developing websites and online stores that enhance customers' adoption. The research concerning Finnish online pharmacies is very limited as well, specially regarding the prescription medicines. Innovation adoption has not been studied in this context either. As a managerial contribution, the study will help pharmacies to identify potential obstacles in the adoption process of the online channel and to develop online pharmacies.

1.2 Research Problem

As the aim of this study is to develop a deeper understanding on the adoption determinants of online pharmacies, and thus the main research question is:

How do consumers perceive purchasing prescription medicines from online pharmacies?

The role of usability and changes in customers' beliefs are empirically examined in the setting, where pre-usage and post-usage beliefs are compared in order to find the differences between initial beliefs and perceptions of actual system use. Thus, the sub questions are:

1) What kind of beliefs potential customers have before any information or experience on the online pharmacies?

2) How do the customers perceive the usability of online pharmacies?

3) What kind of beliefs and perceptions customers have after using the online pharmacy? If they have changed, how and why?

1.3 Literature Review

Innovation adoption and information system adoption is widely studied. The main theories used in the technology adoption research are applied from social psychology models. Davis (1989) has generated the technology acceptance model (TAM), which is the most widely utilized model in information technology adoption study. TAM was created to explain information technology adoption and usage. Davis (1989) studied the adoption of IT applications from the organizational point of view, and for long time this was the main focus of information technology adoption. In recent 15 years there has been growing number of studies on individual and customer context as well.

TAM has been extended several times and in different directions. The most commonly used extensions are TAM2 (Venkatesh & Davis 2000) and TAM3 (Venkatesh & Bala 2008) but many other researchers have pursued to contribute on TAM extensions as well. For example Gefen et al. (2003) have added trust to the model and examined customers trust toward e-vendor. All the extensions of TAM have in common that they use behavioral intention or actual usage as a dependent variable. However, they vary vastly on the antecedents that are theorized to determine the dependent variable.

TAM has been applied in wide range of contexts. It has been used for studies of high-tech product adoption, such as B-to-C mobile commerce, multimedia messaging and smart phones. Mobile commerce and mobile technologies have been common subject of TAM studies. (Shen, Huang, Chu & Hsu 2010, 497-498). TAM and its extensions (TAM2 and TAM3) are also the most typical theoretical basis used in the research concerning online service adoption as well. For example Chan and Lu (2004) have studied adoption and use behavior of online banks in Hong Kong. The research model was based on TAM2 and the results gave support for the model.

Benbasat and Barki (2007) have criticized that even though TAM has significant contributions, the IS adoption study has focused intensely on it and some other aspects have been forgotten. Especially they have criticized the efforts to “patch-up” original TAM in order to keep pace with fast-evolving IT context and claim that it has resulted a theoretical chaos, since there has been numerous extensions of TAM and they have not been based on commonly accepted foundations. According to them, TAM does not provide “a systematic means of expanding and adapting its core models”, and thus its usefulness is limited in fast evolving IT adoption context. They also state that there has been a lack of research focusing on the consequences of IT adoption and the antecedents of the belief construct, especially on IT artifact design and evaluation.

Venkatesh, Morris, Davis and Davis and (2003) examined and compared eight different models used for technology adoption study, and based on their study developed a Unified Theory of Acceptance and Use of Technology (UTAUT). The models compared in the study were TRA, TAM, Motivational Model (MM), TPB, Combined TAM and TPB, Model of PC Utilization (MPCU), Innovation Diffusion Theory (IDT), Social Cognitive Theory (SCT). Similarly to TAM and its extensions, UTAUT has been applied in wide range of contexts. UTAUT model has also been modified to fit better to consumer adoption study (Venkatesh, Thong and Xu 2012).

There has been a growing interest on post-adoption behavior as well. Some researchers (for example Bhattacharjee 2001) have argued that TAM models overlook the aspect of post-adoption behavior that is more crucial for the success of the technology than just initial adoption. Choi et al. (2011) have studied post-adoption behavior in the context of mobile data services. The aim of the study was to identify antecedents of post adoption behavior by using

motivational factors. Also Venkatesh and Goyal (2010) have studied the changes in IS users' reactions over time. Bhattacharjee (2001) and Bhattacharjee and Premkumar (2004) have developed a two-stage model of cognitive change to study the changes in beliefs and attitudes in information technology context. The model highlights the significance of post-adoption expectations rather than initial adoption expectations that are emphasized in TAM.

There have been several study approaches for usability, and one main stream has been focusing on websites and other online applications. Despite of the number of studies and several attempts to develop common measurements, there is a wide range of measurements and determinants used in usability studies. For example Agarwal and Venkatesh (2002) have developed measurement for website usability. They based their study on the Microsoft Usability Guidelines, and suggested constructs such as content, ease of use, promotion, emotion and made-for-medium. They found significant relationship between the constructs and website use.

Palmer (2002) has studied website usability factors and their effect on website success. He proposed a model that included usability determinants such as download delay, navigability, site content, interactivity and responsiveness. Nathan, Yeow and Murugesan (2008) have examined key web interface usability factors for different student-related websites. They found out that different sets of usability factors were significant for different site categories, i.e. industry groups. Studies (Wixom & Todd 2005) have found design characteristics to have a positive effect on information system adoption. In addition, Venkatesh and Bala (2008) have incorporated design characteristics in TAM3 model.

Several studies have attempted to combine usability with the IS adoption study as well. For example Lu and Yeung (1998) have stated that usability and functionality are attributes of usefulness. Nielsen (1993) however sees usability as a part of information system acceptance. He implies that information system adoption consists of social acceptability and practical acceptability. Usefulness is an attribute of practical acceptability and usability is an attribute of usefulness. Lin (2013) combined the usability study with TAM, by attaching efficiency and effectiveness to perceived usefulness construct, whereas learnability and memorability were attributed to perceived ease of use. Negative correlation was found between perceived ease of use, and learnability and memorability, which is consistent with TAM. However, the correlations were not significant.

There are only few studies concerning Finnish online pharmacies, and especially there is a lack of study regarding online trade of prescription medicine, mainly because it is a relatively new phenomenon. In addition, the international research of online pharmacies is limited, and the research could not even be fully applied to Finland due to national differences in the regulations of pharmacies. The most of the research concerning pharmacies is done in the universities' departments of pharmacy, so the focus of the research is in issues that are the interest of pharmacy, and the actual business side is rather overlooked. The research of pharmacies' e-commerce concentrates mainly on electronic medicine information that has been studied for example by Prusti, Lehtineva, Pohjanoksa-Mäntylä and Bell (2012) and Mononen (2012).

Sintonen (2008) has studied the adoption of the information technology innovations in health care context. The target of the study was elderly people and the aim was to find out the possibilities of introducing IT applications in elderly care. According to the study, perceived behavioral control and computer anxiety were main determinants of the adoption. Especially individual's health was found to affect on computer anxiety, whereas age was not as significant. The healthcare technology adoption has been studied from organizational point of view quite widely. For example Escobar-Rodríguez, Monge-Lozano and Romero-Alonso (2012) have studied the acceptance of electronic prescriptions and automated medication-management in a hospital context. Also Hu, Chau, Sheng and Tam (1999) have studied physicians' adoption of telemedicine technology. Both studies used TAM as a base theory.

1.4 Theoretical Framework

The theoretical framework (Figure 1) of the study combines three streams of information system and technology acceptance research. The main idea behind the framework is that behavioral or continuance intention regarding the target system is determined by the comparison of the initial beliefs and perceptions gained during the system usage. Initial beliefs are theorized to consist of constructs such as perceived usefulness, perceived ease of use and trust that are used as attitude determinants in TAM (Davis 1989; Davis, Bagozzi & Warshaw 1989) and its extensions (for example Gefen et al. 2003). In addition, beliefs such as social influence and facilitating conditions are empirically examined but based on the prior research they are not expected to have significant role in the adoption process. Price value

(Venkatesh et al. 2012) is expected to affect the post-usage perceived usefulness, as the customers will form perceptions regarding it during the usage of the service.

The expectation-confirmation model (Bhattacharjee 2001; Bhattacharjee & Premkumar 2004) is applied by adding satisfaction and disconfirmation to the theoretical framework, as predictors of continuance intention. Usability of the website is theorized to have influence on the process by affecting disconfirmation or confirmation that is formed based on it and the initial beliefs. Pre-usage beliefs represent the pre-usage determinants in the framework, whereas usability, confirmation, price value, post-usage perceived usefulness and satisfaction embody the post-usage variables. Perceived usefulness is expected to have a significant role in post-usage stage as well, since it has been constantly found to be the most significant determinant of technology adoption (for example Chan & Lu 2004, 35; Davis et al. 1989; Venkatesh et al. 2003; Venkatesh & Bala 2008, 290).

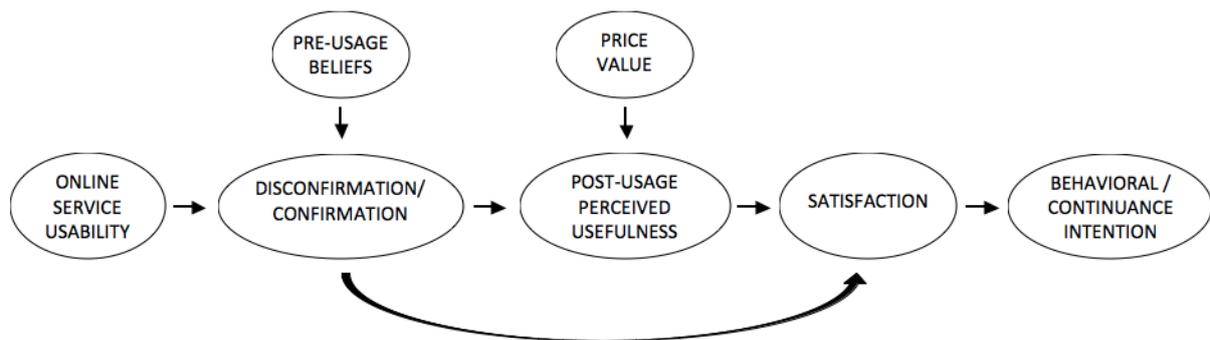


Figure 1. Theoretical Framework

1.5 Key Concepts

According to Rogers (1995), *adoption* is the decision to make full use of an innovation as the best course of action available. As an opposite, rejection is the decision to not adopt. Kotler,

Keller, Brady, Goodman and Hansen (2009, 861) define adoption as “an individual’s decision to become a regular user of a product or service”.

Behavioral intention (and the similar concept of continuance intention) is the motivational factor, which determines the actual behavior if it is under individual’s volitional control. It indicates how much effort an individual is willing to exert to perform the behavior, and hence the stronger the behavioral intention is, the more likely it is that the behavior is performed. (Ajzen 1991, 181) Behavioral intention is a central factor used in all information system and technology adoption theories. It has been constantly found to significantly correlate with usage and other factors influence on behavior indirectly by influencing behavioral intention (for example Davis et al. 1989, 991; 993; 997).

The theory of planned behavior (Ajzen 1991, 189) suggests that individual’s behavior is a function of **beliefs** that are relevant for the behavior in question. These beliefs are salient information that is determinant of individual’s intentions and actions. According to Ajzen (1991, 189) there are three kinds of salient beliefs: Behavioral beliefs determine the attitude toward the behavior, normative beliefs have effect on subjective norms and control beliefs are the basis for perceptions of behavioral control. TAM (Davis 1989; Davis et al. 1989) suggests that the significant beliefs determining technology adoption are perceptions of usefulness and perceived ease of use. Overall, the most commonly used beliefs in IS adoption are perceived usefulness, perceived ease of use, social influences and trust and risk perceptions.

Disconfirmation or confirmation construct represents the dissonance between the expectations an individual has before getting to know a certain technology or product and the perceptions he or she has after the initial adoption (Bhattacharjee & Premkumar 2004, 231).

Perceived usefulness has been originally defined as “the degree to which a person believes that using a particular system would enhance his or her job performance” (Davis 1989; Davis et al. 1989, 985). Venkatesh et al. (2012, 159) use in their UTAUT model similar *performance expectancy* construct that is defined in the consumer use context as “the degree to which using a technology will provide benefits to consumers in performing certain activities”.

Price value can be defined as “consumer’s cognitive tradeoff between the perceived benefits of the application and the monetary cost for using them” (Venkatesh et al. 2012, 161).

Satisfaction refers to an affect that is formed based on disconfirmation and initial expectations (Bhattacharjee & Premkumar 2004, 231).

There is a vast range of definitions for *usability*. Usability can be seen referring to the ease that a human-computer interface is used with (Lin 2013). Agarwal and Venkatesh (2002, 169-170) have used the ISO definition of usability, which describes usability as “the extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use. Some researchers have described usability more in detail, focusing for example on user relevance, efficiency, user attitude, safety and learnability. In addition, it has been noted that usability is contingent upon the system, since different criteria are primary in different contexts. (Agarwal & Venkatesh 2002, 170) The evaluation of usability is always focused on an individual user, specific task and particular context of usage (Christophersen & Konradt 2012, 840). A study (Lin 2013) has showed usability attributes to be more consistent and objective when a specific task performance is measured. Web usability has been also defined as a combination of design goals striving to make a website easy to learn, remember, understand and find, and effective to use (Rahman & Ahmed 2013, 41). Nielsen (2012) provides an understanding on the relations of usability, usefulness and utility. According to him, utility refers to the functionality of a user interface: does it do what is needed? Usability however means how easy and pleasant it is to use the features. Usefulness is a combination of usability and utility.

1.6 Delimitations

The study focuses only on innovation adoption from the consumer point of view. Thus, the organizational context of the online pharmacy adoption is excluded from the study. In addition, the focus of the study is on regular pharmacy customers and for example home nursing customers and customers from sheltered housing are excluded. The context is official Finnish online pharmacies only, international online stores are not examined and online stores run by other operators than Finnish pharmacies are excluded as well. The study is also limited

to examining the prescription medicines purchases online, and therefore over-the-counter medicines and other pharmacies' online sales are not considered.

The purpose of the study is to examine the behavioral and continuance intention of the potential customers. However, it was not possible to conduct longitudinal study, with the exception of one respondent who was interviewed and observed twice. That is why the effect of experience gained with the system, cannot be fully considered.

1.7 Research Methodology

As presented earlier, the majority of the technology and IS adoption research is done in quantitative methods. Nevertheless, there is also quite extensive exploratory and interpretative research tradition concerning information systems, even though it is not widely applied in adoption research. As the aim of the study is to gather a deep understanding the adoption process of online pharmacy and particularly to examine different factors affecting on it rather than for example causalities between constructs, qualitative approach for the research and analysis is appropriate.

The case study approach is used in the study, since for the approach is typical the effort to deeper understanding of a phenomenon studied. Case study is well in place when the focus is on complex social phenomena. Therefore the aim is to gather diverse information concerning the case, and several methods may be used in order to get this information. (Metsämuuronen 2005, 206; Yin 2014, 4)

Research methods used in data collection are semi-structured interview and a combination of think-aloud and observation. The most common data collection methods for usability study are think-aloud, observation, interview, questionnaire survey and performance measure. In addition, it is common to combine observation and think-aloud, since it provides broader view on the subject than using only one of the methods. (Lin 2013, 246-247) The idea of an interview as a data collection method is based on that the best way to get information about people's life and thoughts; it is best to ask them (Saaranen-Kauppinen & Puusniekka 2006). The strength of an interview, especially semi-structured interview, is its flexibility. Interview makes it possible for a researcher to repeat and clarify questions and also to have discussions

with the informants. In addition, the question order can be considered during the interview. (Tuomi & Sarajärvi 2003, 75-76) For this study, the flexibility is an important factor, since the aim is to examine the phenomenon in depth.

Interviews were conducted as semi-structured interview. Semi-structured interview is suitable method for data collection when it is needed to get information from intimate and sensitive issues or issues that the informants do not easily recognize, such as values (Metsämuuronen 2008, 41). In semi-structured interview, in some cases referred as theme interview as well, the order and presentation of the questions are not fixed, and the interviewees are allowed to answer by their own words without answer options. (Saaranen-Kauppinen & Puusniekka 2006) In semi-structured interview there is typically a framework of preset themes that the interview is based on. The themes are basically founded on the conceptual framework of the study. (Tuomi & Sarajärvi 2003, 77) There can be preset guideline questions derived from the themes but also supplementary questions can be added during the interview (Metsämuuronen 2008, 41; Tuomi & Sarajärvi 2003, 77). In this study, the guideline questions were designed beforehand but in practice they altered to some extent between interviews. In addition, the respondents were allowed to talk freely about the subjects at hand.

Observation can be included in interviews; hence researcher can focus not only on what is said but also how it is said (Tuomi & Sarajärvi 2003, 75-76). Observation can be defined as "the systematic description of events, behaviors and artifacts in the social setting chosen for study". Participant observation in turn can be defined as "the process of learning through exposure to or involvement in the day-to-day or routine activities of participants in the researcher setting". (Kawulich 2005) In observation the researcher collects the data by observing the research subject. With observation it is possible to find out if people really act as they say they act. This is why the results may differ depending on in the data is collected with interviews or with observation. (Metsämuuronen 2008, 42; Saaranen-Kauppinen & Puusniekka 2006) There is a distinct difference between daily observation and scientific observation, as previous is random looking and latter systematic monitoring (Saaranen-Kauppinen & Puusniekka 2006).

The aim of using observation as the data collection method is typically to develop a holistic understanding of the studied phenomena. Observation provides a way to get direct information on actions and behavior of individuals, groups or organizations, and access to the

natural environment of events. It also makes it possible for the researcher to monitor nonverbal expression of feelings instead of relying solely on spoken words, and thus is suitable for getting information that informants are unwilling to share to the researcher. (Kawulich 2005; Saaranen-Kauppinen & Puusniekka 2006)

Researcher must decide to what extent to participate or intervene in the situation that is studied. Observation can be divided in different categories based on the observer stance. Maybe the most common is the division of four observer stances: complete participant, participant as observer, observer as participant and complete observer. (Kawulich 2005; Metsämuuronen 2008, 42; Saaranen-Kauppinen 2006) Observer as participant was selected as an observer stance, since it enables the researcher to participate in the situation if needed still keeping the main role of researcher to be as observer. In addition, it would have been impossible to carry out the observation without informants knowing it, as the complete observer stance suggests.

Observation can be a problematic as an only data collection method, since the data analysis might be challenging. However, combined with another method, such as interview, it is a useful tool. (Saaranen-Kauppinen & Puusniekka 2006; Tuomi & Sarajärvi 2003, 83) Critic on observation points out that the observer may disrupt the situation that is monitored or even change it. If researcher forms an emotional tie/bond to informants, it may deteriorate the objectivity of the study. (Saaranen-Kauppinen & Puusniekka 2006) In addition, it can be difficult to store the observations instantly in the situation at hand, and they may be bias if the things are remembered incorrectly (Saaranen-Kauppinen & Puusniekka 2006). In this study, video recording was used in order to avoid problems concerning field notes, and also to enable more comprehensive analysis of the nonverbal communication. In this case video recording is justified also because the observation concerns only one individual and his/her actions, so there is no concern that something relevant for the study would be left outside of the screen.

1.8 Structure of the Study

The study consists of theoretical and empirical parts that are connected. First, the theoretical part provides overlook on the concepts related to the phenomenon. Chapter 2 attempts to

provide the main theories and main constructs of information system adoption. In Chapter 3, the research focusing on usability of information systems and web applications is discussed, and the chapter also presents the most commonly used usability attributes.

The theoretical part consists of the three latter chapters of the study. Chapter 4 focuses on the context of the study by introducing the pharmacy business in Finland in general and online pharmacies more in detail. Chapter 5 first introduces the conduction of the empirical study, and then the results. Finally the Chapter 6 concludes the study and discusses the results, and provides the managerial contribution of the findings.

2 INFORMATION SYSTEMS ADOPTION

As stated earlier, information systems adoption has been studied quite extensively. This chapter examines the prior research. First, the most common information adoption theories and their stance on the relations of adoption determinants are introduced. In the second part the most common conceptualizations of the adoption determinants are presented. The final part of the chapter takes a closer look on the continuance behavior.

2.1 IS Adoption Theories

The origins of information system adoption study are in social psychology. Theory of Reasoned Action (TRA) and Theory of Planned Behavior (TPB) are social psychology models that describe general behavior of individuals, and that are basis for many technology adoption models. According to the TRA model, behavioral intention determines human's consciously intended behavior. Behavioral intention in turn is impacted by individual's attention toward the behavior and subjective norms related to it. (Ajzen 1991, 181) In TRA, attitude refers to individual's positive or negative feelings towards the behavior and its estimated impacts.

Ajzen (1991) has developed Theory of Planned Behavior (TPB), which is based on TRA but strives to supplement its weaknesses. TRA does not take account issues that an individual cannot control or choose, but which are outside individual's influence. TPB implies that behavioral intention is generated not only based on attitude and subjective norm but also perceived behavioral control. (Ajzen 1991; Kotler et al. 2009, 136) In other words, the new perspective TPB adds to the adoption process is that even though individual would have positive attitude towards a certain behavior, it can be rejected if the process seems to be too complicated or the individual feels that he/she does not have resources required to perform the behavior (Kotler et al. 2009, 136). However, both TRA and TPB are general models and therefore they are not as such suitable for describing an individual's IS adoption (Davis et al. 1989; Tsai, Chien & Tsai 2014, 140.)

2.1.1 Technology Acceptance Models

Technology Acceptance Model (TAM) is a theory based on TRA and TPB, and it the most widely used model for examining information technology adoption. TAM predicts the individual adoption and use of new information systems. The basic idea behind all variations of the technology acceptance model is that the adoption of information system is determined by two beliefs: perceived usefulness and perceived ease of use. (Venkatesh & Bala 2008, 275-276) The aim was to develop a model that could be used widely for studying the adoption of broad range of information system applications, and for different user groups as well. (Chan & Lu 2004, 24; Davis 1989; Davis et al. 1989) Davis et al. (1989, 988) emphasize this difference between TAM and TRA regarding the determinants of attitude: In TRA, the beliefs influencing attitude are seen as distinctive for each context and thus they cannot be generalized for other systems, whereas TAM's usefulness and ease of use are intended to be general determinants of technology acceptance.

According to TAM, behavioral intention is the construct determining the actual behavior, the use of a target technology. Behavioral intention is formed based on the attitude and the determinants for attitude are perceived usefulness and perceived ease of use mentioned earlier. Perceived usefulness and perceived ease of use in turn are a result of external factors. (Davis et al. 1989) According to studies, perceived usefulness and perceived ease of use correlate strongly with the behavioral intention. In addition, there is strong correlation between behavioral intention and actual behavior. However, the role of attitude as a mediator is under dispute, since studies have not always supported its role, some researchers have excluded it from the model. (Davis et al. 1989; Tong 2010)

If individual does not consider the technology as ease to use, the adoption is more difficult. Davis et al. (1989, 333-334) suggest in their study that perceived usefulness is more strongly connected to the adoption than perceived ease of use. This proposes that users accept the system primarily because the usage is useful for them and secondary because it is considered to be ease. If technology is crucially useful, people are willing to endure difficulties in the usage up to some point. However, the same does not work other way around ergo perceived ease of use does not compensate lack of usefulness enough for individual to adopt the technology. For example Chan and Lu (2004, 35) have gained similar results that suggest that

perceived ease of use does not have significant connection to intention to adopt a technology whereas perceived usefulness has a strong positive effect on behavioral intention.

The original TAM suggests that perceived usefulness and perceived ease of use are formed based on external factors. It has been stated that studies based and focusing on these external factors had been only limited (Chan & Lu 2004, 24). Hence the original technology acceptance model has been extended in several studies. For instance perceived risk, usability of technology, computer anxiety, image, trust and perceived computer self-efficacy has been added to the model. In addition, impact of features such as demographic factors has been studied. However, most of the extensions are made and studied in organizational context only. (Chan & Lu 2004; Gefen et al. 2003; Sintonen 2008, 40-41; Venkatesh & Davis 2000)

Wixom and Todd (2005, 86-87) have combined the three common extensions of TAM in Figure 2. They suggest that original TAM has been extended with three different approaches. First, there have additions of factors, such as subjective norm and perceived behavioral control, that are used in other related models. Second approach has provided additional belief factors alongside perceived usefulness and perceived ease of use, or alternatives for them. Most commonly these factors have been adapted from the diffusion of innovation literature. Third approach has been to focus on external variables determining or moderating perceived usefulness and perceived ease of use. These factors include for example system characteristics and personality traits.

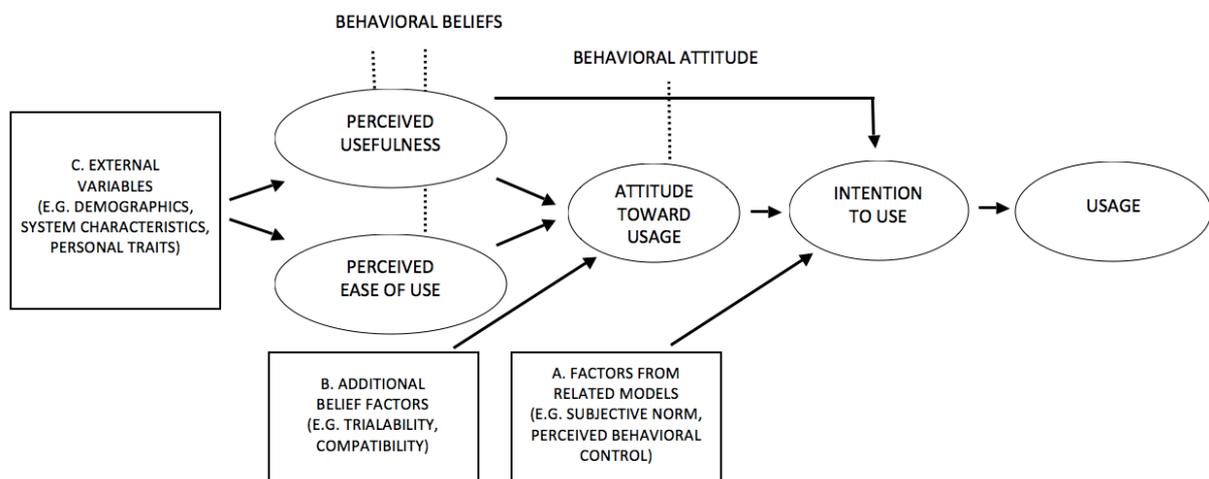


Figure 2: The Extensions of TAM (Wixom and Todd 2005)

TAM2 by Venkatesh and Davis (2000) was the first extended technology acceptance model. It was first to incorporate the examining of the external variables to the technology acceptance theory. According to the model, perceived usefulness and behavioral intention are explained regarding to social influence processes and cognitive instrumental processes. Social influence processes consist of subjective norm, voluntariness and image, whereas cognitive instrumental processes are a result of perceptions on job relevance, output quality, result demonstrability and perceived ease of use. In addition, TAM2 pursues to understand, how the influences of the determinants are moderated by the experience the users gain when using the target system. (Chan & Lu 2004, 24; Venkatesh & Davis 2000; Venkatesh & Bala 2008)

Venkatesh and Bala (2008) developed TAM3 by synthesizing prior TAM research. The model is similar to previous technology acceptance models, but it argues that attitude does not have a significant role in the adoption process, and thus it is excluded from the model. Perceived usefulness and perceived ease of use are theorized to be direct determinants of behavioral intention. Perceived ease of use is still seen as a determinant of perceived usefulness as well. The model explains perceived ease of use to be determined by two sets of constructs called anchors and adjustments. These and the determinants of perceived usefulness provided by model are discussed more in detail later in the chapter. Another new addition that TAM3 provides is the moderating effect that experience and voluntariness are assumed to have on for example to perceived ease of use.

2.1.2 UTAUT

UTAUT stands for Unified Theory of Acceptance and Use of Technology. The model was developed as a synthesis of prior technology acceptance studies based on TAM and TAM2, and it is technically one of the technology acceptance models. (Venkatesh et al. 2012; Venkatesh et al. 2003) UTAUT consists of four core determinants for intention and usage that are performance expectancy, effort expectancy, social influence and facilitating conditions, and four moderators for key relationships. The original UTAUT suggests that performance expectancy, effort expectancy and social influence are the determinants influencing behavioral intention, whereas behavioral intention and facilitating conditions determine actual technology use. The moderators of the relationships are gender, age, experience and

voluntariness of use weaken or reinforce the effect of the determinants. (Venkatesh et al. 2012, 159; Venkatesh et al. 2003, 447)

Longitudinal field studies regarding UTAUT in organizational context have shown that the model explains approximately 50 percent of the variance in technology use and approximately 70 percent of the variance in behavioral intention (Venkatesh et al. 2012, 157). UTAUT models have been utilized widely in the consumer context as well (Martins, Oliveira & Popovic 2014, 3). Venkatesh, Thong and Xu (2012) have applied the UTAUT theory also to the consumer use context and created UTAUT2 (Figure 3) by adding three determinants to the model and excluding voluntariness. Since the first UTAUT model was studied in organizational context, the approach to the motivation of the adoption has been on utilitarian value, i.e. extrinsic motivation. Venkatesh et al. (2012, 160-161) note that hedonic motivation has been in significant role in consumer behavior research, hence it is added to UTAUT2. Similarly price value is included as cost related constructs have been important factors when explaining consumers' actions. The third added construct is context habit, since it has been a critical factor predicting technology adoption beyond initial acceptance.

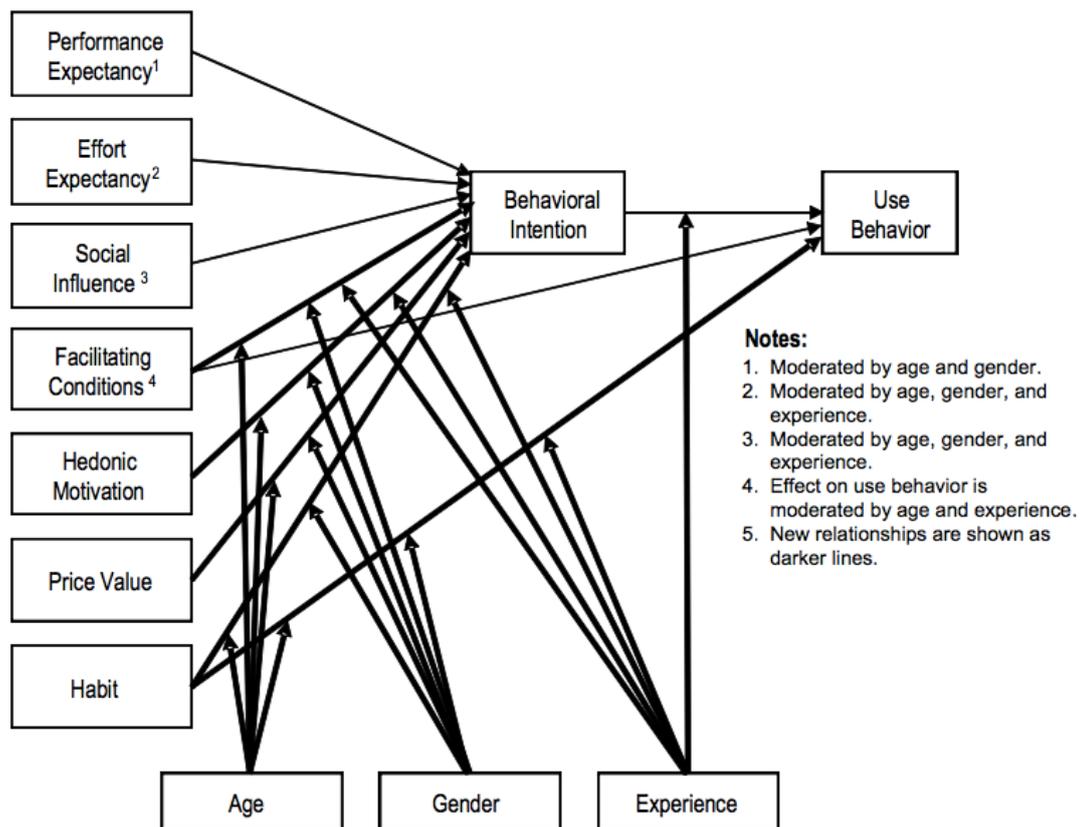


Figure 3. UTAUT2 Model (Venkatesh et al. 2012)

Benbasat and Barki (2007) have stated that focusing on TAM has distracted the adoption study's emphasis and examining of both design-based and implementation-based antecedents, and behavior-based and performance-based consequences of information technology acceptance has been forgotten. They claim that even though IS adoption research has paid a lot of attention to perceived usefulness, the construct itself has been taken as "a black box" with only little effort on what actually makes an information system easy to use. Furthermore they suggest that the studies have seen the outcomes of an IS adoption too narrowly and system use has been defined only as a frequency or an amount, and other user behaviors, such as reinvention and learning, has been ignored. Thus they suggest a development of new multi-stage, longitudinal models of IS adoption. Benbasat and Barki (2007, 213) have also criticized UTAUT model, since from their perspective the model brings TAM back to its origins, i.e. TRA, by adding social influences and facilitating conditions to it. Moreover, they argue that

UTAUT is not very different from TPB, since social influence and facilitating conditions are overlapping with TPB's subjective norms and perceived behavioral control, and PU and PEOU can be seen as antecedents of attitude construct.

2.1.3 IS Continuance Model

The original adoption theories focus on the adoption process but do not take account what happens after the adoption. Bhattacharjee and Premkumar (2004, 229-230) have remarked that the beliefs, attitude, intention and usage of information systems change over time because individuals experience IS usage personally and learn from it. In addition, Bhattacharjee (2001) has noted that even though adoption is a central issue in information system's success, in the long term its success is dependent on continued use instead of just the first-time use.

The idea of continuance has been examined in the IS adoption literature already before. For instance, in the final stage of innovation diffusion theory (i.e. confirmation phase) adopters re-evaluate the acceptance decision (Rogers 1995). In addition, the concept has been examined as "implementation", "incorporation" and "routinization" (Bhattacharjee 2001, 352). However, Bhattacharjee (2001, 352) argues that all these previous studies have examined continuance only as an extension of acceptance behavior and that the studies presume that continuance co-varies with acceptance. Hence, the previous studies provide only a limited view on the continuance behaviors and have not been able to clarify the discontinuance in IS use after the initial acceptance. Tsai et al. (2014, 141) have noted that prior studies have also seen continuance behavior as an extension of adoption and thus pursued to explain it with TAM. For example Hong, Thong and Tam (2006) have argued that adoption intention and continuance intention could be seen as similar constructs, and just be measured at different points of time.

The models of IS continuance are based on expectation-disconfirmation theory (EDT) presented in Figure 4, which is a cognitive theory that has been widely used to examine post-purchase or post-adoption satisfaction and behavior. In the first phase of the process, consumers develop an initial expectation concerning the product or service before the actual purchase. After the acceptance and initial use the product or service, the perceptions of its performance are formed. Then consumers evaluate the perceived performance by comparing

it to the original expectation and determine how well their expectations are confirmed. Based on expectations and confirmation level, consumers then form a satisfaction, and a repurchase intention if they are satisfied. (Bhattacharjee & Premkumar 2004; Bhattacharjee 2001, 353; Oliver 1980; Tsai et al. 2014)

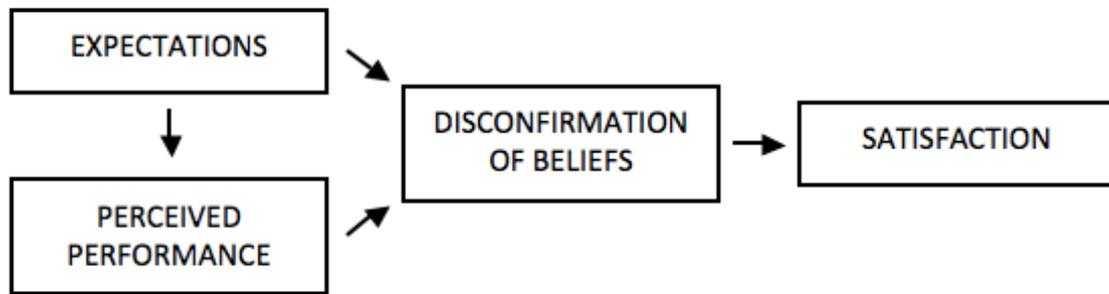


Figure 4. Expectation-Disconfirmation Theory (Bhattacharjee 2001)

Bhattacharjee (2001) and Bhattacharjee and Premkumar (2004) have examined changes in beliefs and attitude towards information technology usage and developed a two-stage model of cognition change (Figure 5) Perceived usefulness and attitude are the main constructs in the model, both in the pre-usage stage and the usage stage. Disconfirmation and satisfaction are the constructs stimulating usefulness and attitude in the post-usage stage. Continuance intention is present in the model but other beliefs commonly used in the IS adoption study, such as perceived ease of use, are excluded.

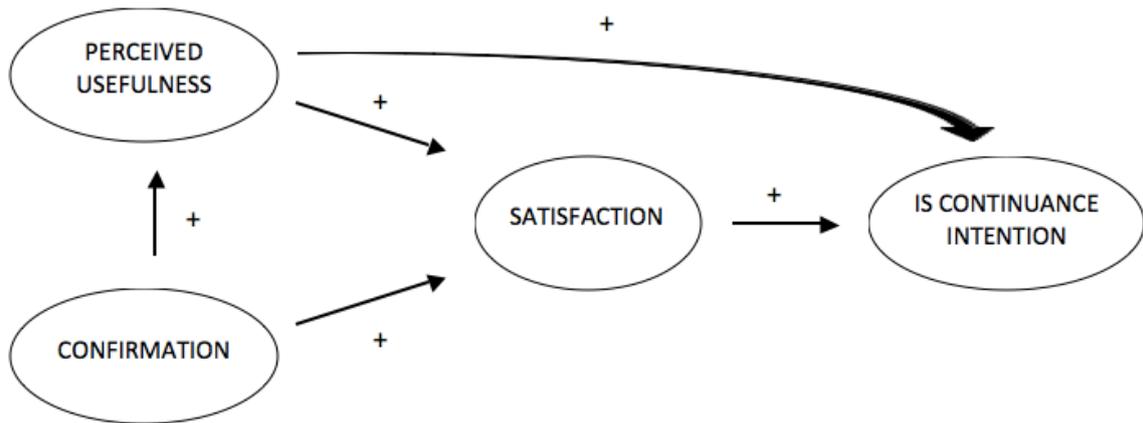


Figure 5. IS Continuance Model (Bhattacharjee 2001)

The model proposes that pre-usage beliefs and attitude would have direct effects on beliefs and attitude in the usage stage, and indirect effects via the disconfirmation and satisfactions constructs as well. Furthermore it suggests that the usage-stage beliefs are the result of pre-usage beliefs and disconfirmation, whereas the usage-stage attitude is determined by pre-usage attitude and satisfaction. The change in the perceptions tends to change more in the initial phases of information technology use than later. (Bhattacharjee & Premkumar 2004, 234)

2.2 Adoption Constructs

There are several theories and models explaining information system adoption, and they provide a broad selection of determinants for adoption. The most of the studies are unanimous of the significance of perceived usefulness and perceived ease of use but even these determinants have alternative conceptualizations in the IS adoption research. Next the common constructs and their alternatives are discussed more in detail.

2.2.1 Perceived Usefulness and Motivation

Perceived usefulness has been found to be the strongest predictor of behavioral intention in technology acceptance context. It has been constantly found to correlate with behavioral intention in the initial adoption stage and in the post-adoption stage as well. Individuals are more likely to adopt an IS system if the system is perceived enhancing the task performance at hand. (Chan & Lu 2004, 35; Davis 1989; Davis et al. 1989; Oliveira, Faria, Thomas & Popovic 2014, 697-698; Venkatesh et al. 2003; Venkatesh & Bala 2008, 290).

As mentioned earlier, in the original TAM it was noted that perceived usefulness could be influenced by various external variables. Before TAM, it several studies had found that there is a significant relationship between system characteristics and measures that are similar to perceived usefulness, but the early TAM studies focused mainly on the relation between perceived usefulness and perceived ease of use. (Davis et al. 1989, 987) However, TAM provides several factors for evaluation of perceived usefulness. These factors are ability to work more quickly, job performance, effectiveness, making job easier and increased productivity. (Davis 1989)

The extended technological acceptance model (TAM2) proposes six determinants and two moderators for perceived usefulness. The determinants are subjective norm, image, job relevance, output quality, result demonstrability and perceived ease of use, whereas moderators are experience and voluntariness. (Venkatesh & Davis 2000) The determinants of subjective norm and image fit into the category of social influence, whereas job relevance, output quality, result demonstrability and perceived ease of use are system characteristics that represent individual's cognitive instrumental processes (Venkatesh & Bala 2008, 277-278).

Job relevance refers to the individual's belief of how well the target system is applicable to his or her job. This can be seen as a minimum requirement in order the new behavior to be conducted. Output quality means the degree to which an individual perceives that the system will execute his or her job well, thus it is more profound evaluation of the results the behavior would lead to. (Venkatesh & Davis 2000) Result demonstrability can be defined as "the degree to which an individual believes that the results of using a system are tangible, observable, and communicable" (Moore & Benbasat 1991). In other words, result demonstrability refers to how well individuals can see the results of the behavior. If

individuals do not understand the potential consequences of the behavior, they do not perceive it to be useful.

Venkatesh and Davis (2000, 190) argue that these cognitive instrumental processes are significant for forming perceptions of usefulness because individuals “form perceived usefulness judgment in part by cognitively comparing what a system is capable of doing with what they need to get done in their job”. In other words, TAM2 suggests that individuals form mental evaluation on how well the perceived outcomes of using the system are fit with the significant work goals they are trying to achieve. (Venkatesh & Davis 2000; Venkatesh & Bala 2008, 277-278)

Venkatesh et al. (2003, 449-450; 461) suggest that even though performance expectancy appears to be the strongest predictor of behavioral intention, the relationship may be moderated by gender and age. The authors base the assumption on gender difference research, which indicates that men have tendency to be more task-oriented, based on gender roles and socialization more than biological gender differences. Performance expectancy focuses on task accomplishments and that is why it might be more significant to the male gender.

TAM2 proposes that result demonstrability and perceived ease of use have positive direct effect on perceived usefulness, while job relevance and output quality would have a moderating influence on perceived usefulness. This means that when output quality is higher, job relevance has stronger relevance on perceived usefulness. (Venkatesh & Davis 2000; Venkatesh & Bala 2008) Both Venkatesh and Davis (2000) as well as Venkatesh and Bala (2008) found especially perceived ease of use, subjective norm, image and result demonstrability to be the significant determinants of perceived usefulness. Chan and Lu (2004) have found the effect of perceived usefulness on behavioral intention to be stronger for individuals already using the target technology than for potential users. They suggest that this is because the users already have direct experience with the technology.

Perceived usefulness is closely linked to the concept of motivation. Thus, examining motivation more closely brings a different perspective on the adoption process. For example Davis et al. (1992) and Ryan and Deci (2000) divide motivation into intrinsic and extrinsic motivation. Extrinsic motivation refers to performance and outcomes of a certain behavior, whereas intrinsic motivation focuses on satisfaction and fulfillment. Davis et al. (1992)

defined extrinsic motivation construct which means “the perception that users will want to perform an activity because it is perceived to be instrumental in achieving valued outcomes that are distinct from the activity itself, such as improved job performance, pay, or promotions”. Intrinsic motivation suggests that individuals do not seek only instrumental values for achieving certain goals but the satisfaction of the action it self plays an important role as well. For example Koufaris (2002, 207) has noted that some customers see shopping as a mean for getting out, socializing and having fun, and not just purchasing needed things, and a website can be unappealing for them if they cannot participate. Internet based services can provide different value to the customer than what they get when shopping in a brick-and-mortar store. Rogers (1995) and Taylor and Todd (1995) suggest that these values could be for example economical benefits, convenience and personal image.

2.2.2 Price Value

Price value is a construct that represents one of the most significant differences of adoption in organizational use setting and consumer use setting. In organizational context the employees do not bear any monetary cost, whereas in consumer use context do, and hence, the pricing structure and costs can be a significant factor. It has been implied that in the consumer context, price value could actually dominate the whole adoption process. (Venkatesh et al. 2012, 158-161)

Price value is positive when a consumer considers the benefits greater than the monetary cost and negative when cost is considered bigger than benefit. Positive price value has a positive effect on behavioral intention. (Venkatesh et al. 2012, 158-161) Kuisma, Laukkanen and Hiltunen (2007) have examined the resistance of internet banking, and they found one reason for resistance to be a lack of performance-to-price value. Some customers did not feel to have enough price value from using internet banking, since the costs of purchasing computer and internet connection would be so high.

2.2.3 Perceived Ease of Use

For example Davis et al. (1989) have argued that if an information system is perceived as easy to use, it is more likely that it is adopted, and hence perceived ease of use is a significant secondary determinant of technology acceptance after perceived usefulness. Perceived ease of use can be defined as “the degree to which a person believes that using an IT will be free of effort (Venkatesh & Bala 2008, 275). Similarly to perceived usefulness, Venkatesh et al. (2003, 450) have used a comparable construct for perceived ease of use. Effort expectancy is defined as “the degree of ease associated with the use of the system”. Venkatesh et al. (2012, 159) have applied the construct in the consumer use context and in this case it has been defined as the degree of ease related to the consumers’ use of technology.

According to the comparison between different models conducted by Venkatesh et al. (2003, 450), perceived ease of use or effort expectancy construct is significant in each eight compared individual acceptance models. Even though an information system is considered useful, it may not be adopted if an individual finds it too difficult to use. In other words, individuals evaluate the relation of effort and benefit for using an information system, and if the effort is perceived greater than the benefits of using the system, adoption is rejected. (Lin 2013, 245; Tsai et al. 2014, 142)

However, perceived ease of use appears to be significant only in the early stages of the new behavior, and with extended and sustained use it becomes insignificant. This is in line with other studies as well that indicate that the significance of perceived ease of use decreases gradually over time. When individuals gain more experience on using the system, perceived ease of use is less connected with the intention to use the system. (Chan & Lu 2004, 35; Davis et al 1989, Tsai et al. 2014; Venkatesh et al. 2003). Oliveira et al. (2014, 698) found perceived ease of use to have insignificant influence on behavioral intention in the adoption of mobile banking, and propose that this is because the main technology, i.e. mobile phones and mobile internet, is familiar for the users.

Koufaris (2002, 207) has suggested that perceived ease of use may have different effect depending on the type of task that consumers are seeking to carry out. Some studies have found its impact to be more significant in the context of inquires about products than when consumers are using the service to actually purchase the product.

Davis (1989) used several factors in order to measure perceived ease of use. The factors were ease to learn, flexibility, controllability, ease to become skillful user, and clarity and understandability. Venkatesh (2000) has examined the determinants of perceived ease of use by creating a model of anchoring and adjustment. He suggests that early perceptions of ease of use are created based on individual's general beliefs about computers and computer usage. These general beliefs called anchors are computer self-efficacy, computer anxiety, computer playfulness and perceptions of external control (which is also referred as facilitating conditions). Whereas anchors determine the initial opinions of perceived ease of use, these beliefs will be adjusted, as individual gains first-hand experience with the certain information system. These system characteristics moderating the beliefs, perceived enjoyment and objective usability, are named as adjustments.

Venkatesh and Bala (2008, 278) argue that the anchors of computer self-efficacy, computer anxiety and computer playfulness represent individual differences and overall beliefs associated with computer use and computers in general. Computer playfulness in particular stands for the intrinsic motivation related to using new information technology. Facilitating conditions (i.e. perceptions of external control) and computer self-efficacy refer to an individual's control beliefs. Facilitating conditions mean the availability of resources and support structure to enable the system use. The difference between computer self-efficacy and facilitating conditions is that computer self-efficacy refers to his or her *own* ability to use the system, while facilitating conditions is related to the beliefs concerning external factors enabling the use. (Venkatesh 2000; Venkatesh & Bala 2008)

According to social cognitive study both self-efficacy and anxiety are significant direct determinants of intention (Chan & Lu 2004, 25; Venkatesh et al. 2003, 455). Self-efficacy refers to beliefs that an individual has regarding his or her own capability to perform a certain task (Chan & Lu 2004, 25) and in the information systems context it has been defined as "the degree to which an individual believes that he or she has the ability to perform a specific task or job using the computers" (Compeau & Higgins 1995; Venkatesh & Bala 2008). Self-efficacy refers to individual's perceptions related to his/her abilities and capabilities to impact on his/her own life and its events. It can also be defined as an individual's perception that he/she can perform needed actions to accomplish something. Self-efficacy is a control related, in particular to behavior that is needed to perform in order to get desired outcome, not a control concerning the actual outcome. (Ajzen 1991, 184) Computer anxiety in turn refers to

the level of an individual's worry or fear in the situations where he or she has a possibility to use computers (Venkatesh 2000, 349; Venkatesh & Bala 2008).

Even though there is a wide empirical support for the relationship between computer self-efficacy and intention to use a target system (Chan & Lu 2004), Prior research (for instance Venkatesh 2000) has shown self-efficacy and anxiety to be conceptually and empirically distinct from effort expectancy (perceived ease of use). It has also been suggested that computer self-efficacy and computer anxiety are not direct determinants of behavioral intention but they influence through perceived usefulness. For example Venkatesh et al. (2003, 461) have found neither self-efficacy nor anxiety to have a direct effect on behavioral intention. Similarly Chan and Lu (2004, 35-37) found in their study that individual's perception of his/her computer self-efficacy had a significant but indirect effect on behavioral intention. They found computer self-efficacy to explain 49 percent of variance of perceived ease of use for potential adopters and 60 percent of variance for users. They suggest that individuals with higher perception of their computer self-efficacy will find the target system easier to use than those with lower computer self-efficacy.

Some studies (for example Venkatesh et al. 2003) suggest that the gender and age of an individual has a moderating effect on perceived ease of use. Venkatesh (2000) also theorized the moderating role of experience on the determinants of perceived ease of use but it was not actually tested in the study. It was assumed that computer self-efficacy and facilitating control would have a strong effect on perceived ease of use also with increasing experience with the target system, whereas the effect of computer playfulness and computer anxiety would diminish over time. It was also expected that the influence of the adjustments, perceived enjoyment and objective usability, would increase over time, as an individual gains more hands-on experience with the target system. (Venkatesh 2000; Venkatesh & Bala 2008, 278) However, also contradictory results have been found, as for example Oliveira et al. (2014, 698) have not found support for this in their study. Based on the results they suggest that when the main technology (in their case mobile phones and mobile internet) is already widely adopted, gender and age do not affect perceived ease of use in the adoption process of certain application (mobile banking).

2.2.4 Social Influence

Social influence is a concept that has been often connected with an adoption behavior but conceptualized in several ways and under several names. The role of social influence constructs has been controversial in studies. It is included in some models, such as TRA and TPB (Taylor & Todd 1995; Thompson, Higgins & Howell 1991) but for example Davis et al (1989) have left it out from the original TAM. If it has been included in the adoption models, it is most commonly seen as a direct antecedent of behavioral intention.

Subjective norm refers to “the degree to which an individual perceives that most people who are important to him think he should or should not use the system” (Fishbein & Ajzen 1975, 302; Venkatesh & Davis 2000). Venkatesh et al. (2003, 451) have defined social influence as “the degree to which an individual perceives that important others believe he or she should use the new system”. Important others refer to people such as family and friends (Venkatesh et al. 2012). Other similar constructs used in acceptance models are subjective norm, social factors and image, as well as social norms or subjective norm. According to comparison study (Venkatesh et al. 2003, 451), all these constructs behave similarly. Image is also a construct related to social influence. It can be defined as the degree to which an individual perceives that using of an innovation or new technology will improve his or her status among his or her social system (Moore & Benbasat 1991; Venkatesh & Bala 2008). The notion that social influence constructs bring to the adoption process is that individuals are affected by the way the other people think about the potential behavior. Or more specifically, they are influenced by the perceptions they have on other people’s attitude toward the behavior.

Venkatesh and Davis (2000, 187) suggest that subjective norm affects directly to behavioral intention because an individual might decide to perform according to hopes and habits of their reference group. However, they also note that findings concerning the effect of the subjective norms have been ambivalent. Chan and Lu (2004, 35) found subjective norm to be one of the most significant factors in online banking adoption. They suggest that adoption is enhanced when the social circle encourages the usage of the online banks. Nevertheless, the influence of the subjective norm on behavioral intention was higher for those already using online banks than among potential adopters. Oliveira et al. (2014, 698) found social influence to be insignificant in mobile banking adoption. They suggest that this may be also because banking issues are considered to be very personal and sensitive, and thus the need of confidential

transactions regarding mobile banking dominates for example the need to impress significant others.

According to the study results of Venkatesh and Davis (2000, 195), subjective norms have an impact on behavioral intention in cases when adoption is perceived to be mandatory, whereas in voluntary context the effect is not found. Social influence construct tends to be insignificant when the use of the system is voluntary but becomes significant in the context where use is required. In addition, when use is mandated, social influence seems to be significant in the early phase of the adoption and it eventually becomes insignificant with sustained use. (Venkatesh et al. 2003, 451-452; Venkatesh & Davis 2000; Hartwick & Barki 1994) The decreasing importance of social influence construct is consistent with observations in other studies as well (Venkatesh et al. 2003, 452; Venkatesh & Davis 2000).

2.2.5 Trust and Risk Perceptions

Trust means that a party can trust that the other party does not behave opportunistically and try to take advantage of the situation. It is an expectation that the other party will not behave opportunistically by taking advantage of the situation. It also includes the expectation that the others will behave ethically and in socially appropriate manner. (Gefen et al. 2003, 54-55). Oliveira et al. (2014, 691) have used the concept of initial trust and applied it to the context of mobile banking. Initial trust refers to individual's willingness to take risks with the purpose of fulfilling a need without prior experience or meaningful information.

Trust is seen to be a key determinant for stable social relationships in general, and important factor of economic transactions as well. It is especially crucial in the situations that can potentially include opportunistic behavior. (Gefen et al. 2003, 52; Kim et al. 2009) It has been suggested that in the adoption of a new technology, trust might be in a key role, as the potential users do not have previous experience on the technology or service provided (Kim & Park 2010; Oliveira et al. 2014). Gefen et al. (2003, 52) argue that trust should be seen as the defining attribute of e-vendor relationships, since social uncertainty and risk are typically high because the behavior of an e-vendor cannot similarly be monitored and guaranteed as in traditional face-to-face vendor relations.

According to Gefen et al. (2003, 54-55), trust against the vendor strengthens the intention to purchase from an online store, also in the cases where the potential customer is experienced user of online stores. They also state that especially in e-business trust have significant role, since customers do not use online stores they consider to be unreliable. Kim and Park (2010) and Oliveira et al. (2014) have found individual's initial trust regarding to a company to be a significant determinant of behavioral intention to use mobile banking.

Determinants of trust can be categorized into three groups: institutional, personal and environmental. Institution-based factors consist of company's characteristics, for example brand, reputation or size. These factors are related for example to individual's perceptions of the company's capability to deliver the service and the reliability in its business engagements, and they are in a key role in the formation of intention to use a new service. Personal factors refer to individual's personality, such as an individual's natural tendency to trust other people. In the case of adoption new technologies, individuals who have higher propensity to trust will naturally have more confidence toward the new technology. Environmental factors are structural assurances, such as service guarantees and social influence. (Kim & Park 2010; McKnight, Choudhury & Kacmar 2002; Oliveira et al. 2014, 691-693) Koufaris has proposed that convenience, flexibility and perceived benefits are also factors affecting on the creation of initial trust.

Some studies have shown perceived risk of online shopping to have an impact on overall attitude toward online shopping (Koufaris 2002, 206). Perceived risk is a construct closely related to trust. Perceived risk can be defined as uncertainty that an individual has to face, since he/she cannot predict the consequences of his/her behavior or actions. Uncertainty and perceptions of the consequences are in the key role. (Chan & Lu 2004, 24) In the business-to-customer e-commerce transaction context the perceived risk has been defined as "a consumer's expectation that the actions entailed in purchasing a good or a service from a b-to-c e-commerce site could have unwanted outcomes". In the online trade context the emphasis of perceived risk is on concerns related to the online channel and not so much on the product itself. (Glover & Benbasat 2011, 48) In the online shopping context perceived risk can be for instance a fear of credit card fraud or not receiving the right product (Koufaris 2002, 206). Perceived risk differs from the objective risk, since the first is something an individual perceives subjectively, whether it actually exists or not, and the latter is something that exists in the real world. (Glover & Benbasat 2011, 48)

For example Chan and Lu (2004, 24) have used perceived risk as an additional construct of technology acceptance model. Perceived risk affects particularly the speed of the adoption, since adoption might be postponed because of the risks. Chan and Lu (2004, 36) found perceived risk to have a significant negative impact on perceived usefulness in the context of online banking. Their results implicate that online banking is perceived less useful, if an individual feels that there is a security risk connected with the usage of the service. The results are consistent with Tong's (2010, 753-754) findings that imply that perceived risk has a negative impact on intention to purchase online. However, previous experience on online stores decreases the perceived risk.

2.3 Continuance Intention and Post-Adoption Behavior

Koufaris (2002) has used customer's intention to return as a measure of loyalty. TPB and TRA state behavioral intention to be a strong predictor of the actual behavior (Ajzen 1991; Fishbein & Ajzen 1975), and intention to return, i.e. continuance intention, can be a justified estimate of customer retention.

As presented earlier, expectation disconfirmation theory explains the continuance behavior with the constructs of disconfirmation and satisfaction. Disconfirmation is a construct that reflects the dissonance between individual's pre-usage expectations, i.e. beliefs, and post-usage perceptions. If the observed performance is above expectations, disconfirmation is positive, and if the observed performance is below the initial expectations, disconfirmation is negative. Disconfirmation is seen as a deviation from the pre-usage expectations. (Bhattacharjee & Premkumar 2004, 231)

Satisfaction or the dissatisfaction is determined by disconfirmation and initial expectation. The difference between disconfirmation and satisfaction is that the first one is a belief and the latter an affect. (Bhattacharjee & Premkumar 2004, 231) Satisfaction is attained if an individual feels that the service quality and performance corresponds with their initial expectations. It has been suggested that user's post-adoption satisfaction correlates with continuance intention. (Tsai et al. 2014, 141;143). The studies have found the user satisfaction to have a positive effect on continuous intention (Bhattacharjee 2001; Tsai et al. 2014).

Post-adopters have been divided into two groups: continuers and discontinuers. According to the studies, these two groups differ from each other: Continuers are typically similar to early adopters who tend to have positive attitude toward new innovations, whereas discontinuers resemble late adopters that usually are more hesitant and concerned about the consequences of using new technologies. (Choi et al. 2001, 1212; Rogers 1995; Venkatesh & Brown 2001) There are also distinctions in usage patterns and expectations between two groups. It has been suggested that early adopters have more realistic expectations, since they more rationally assess the costs and benefits and are already familiar with innovations. Late adopters in stead have unrealistic expectations, since they are more reliant on word-of-mouth and they are also lacking ability to fully utilize new technological innovations. (Choi et al. 2011, 1213)

3 INFORMATION SYSTEM USABILITY

In e-commerce, websites and online stores represent the company and act as customer's gateway to the organization. They also host the interaction between the company and the customers and replace the face-to-face communication that is typical for traditional commerce. That is why the success of e-commerce is largely dependent on the design of an online store. (Calisir, Bayraktaroglu, Gumussoy, Topcu & Mutlu 2009; Palmer 2002) Usability of the website contributes also to gaining and sustaining the trust of a customer in e-commerce (Calisir et al. 2009, 422). It has been argued that online business failures are due to a fact that customers turn away from unusable sites. It is not enough to just have a website or online store if it is too slow or too complex. (Lee & Kozar 2012, 450)

The concept of usability was first introduced in the 1980s referring to a range of subjective attributes of a product. (Rahman & Ahmed 2013, 40-41) It has been a key construct in examining the human-computer interaction (Agarwal & Venkatesh 2002, 169; Lee & Kozar 2012, 451). The interest on usability and design characteristics of the website has risen in the research during the past decades, and some scholars argue that consumer acceptance can be predicted with web quality and usability measures (Gefen et al. 2003, 52). Agarwal and Venkatesh (2002, 169) argue that prior research on HCI has two key findings: First, it has established the importance of consistency in usability design. Secondly the research has provided the idea that users' prior knowledge has an important role when learning of new artifacts and devices.

Agarwal and Venkatesh (2002, 169) have stated that usability may be the key factor when assessing the success of a website. Also Nielsen (1993) has stated that it is crucial factor for acceptance of software. Studies have shown that website usability is related to positive outcomes like increased usage and more positive attitude toward the site. It has also been stated interface design affects largely success of e-commerce and that weak design can have a negative impact on visitor's shopping experience. (Calisir et al. 2009). Prior study has also indicated that interface features of a website can explain approximately 60 percent variance in sales of online stores (Agarwal & Venkatesh 2002, 169).

There is a broad selection of measurements, guidelines and theories of for example website usability (Lee & Kozar 2012, 450). Lee and Koubek (2010, 330) note that the most of the guidelines provided are generally abstract and therefore it is difficult to apply them to specific cases. The majority of approaches on usability generally have two characteristics in common: the usability is seen as a complex construct that has to be measured in variety of ways, and the approaches rely on the subjective assessments of usability by users. (Agarwal & Venkatesh 2002) Also Christophersen and Konradt (2012, 841) have noted that both interviews and questionnaires, the methods that are typical for usability study, are dependent on users' self-reports on their perceptions.

Several dimensions for evaluating information system usability have been defined in usability literature, and the consensus for usability attributes does not exist. In addition, there is also a lack of consensus, whether traditional usability quality attributes can be applied to website usability evaluation or not. There have been several attempts to create a common set of usability criteria but the amount of attributes used in usability evaluation remains high and inconsistent. In addition, Lee and Kozar (2012, 451) argue that prior usability study has focused only on examining usability constructs' direct influence on user's perceptions and behavior and the relationships between the constructs have been forgotten.

Many studies refer to International Organization for Standardization's definition of usability, which states the usability of a software product as the effectiveness, efficiency and satisfaction with which specified users achieve specific goals in certain environments (Agarwal & Venkatesh 2002, 170-171; Lee & Kozar 2012, 451; Lee & Koubek 2010, 330; Rahman & Ahmed 2013, 40-41). Another common set of attributes is by Nielsen (2012): he suggests that usability consists of five components that are learnability, efficiency, memorability, errors and satisfaction. Palmer (2002) has defined five constructs of usability and design that determine website success: download delay, navigation/organization, interactivity, responsiveness and information/content.

Tsai et al. (2014, 138) have defined perceived system usability to consist of perceived usefulness, perceived ease of use and perceived compatibility. Perceived compatibility here refers to "the extent to which a person perceives the use as being consistent with his/her lifestyle, existing values, current needs and prior experiences". Palmer (2002) in turn has defined five constructs of usability and design that determine website success: download

delay, navigation/organization, interactivity, responsiveness and information/content. Rubin (1994) has defined four usability factors that are usefulness, effectiveness, learnability and user satisfaction. Usefulness in this context means that the website does what users need it to do. (Rahman & Ahmed 2013, 41) In this study the attributes suggested by Nielsen (2012) and ISO's definition are used to evaluate online store usability.

3.1 Usability Attributes

ISO defines effectiveness as “the accuracy and completeness with which users achieve specified goals” (Lee & Kozar 2012, 451; Lin 2013, 244), whereas Rubin (1994) has described effectiveness as the ease of use to achieve the desired tasks (Rahman & Ahmed 2013, 41). Goals in this context can be such as information gathering or purchases (Lee & Kozar 2012, 451). Effectiveness is related to functionality, meaning that users are able to do what they need to or want to when they are visiting a website (Lee & Kozar 2012, 451).

ISO describes efficiency as “how fast users can accomplish a task while with the use of an application” (Lin 2013, 244), and it basically is the site's ability to enable users to carry out tasks quickly (Calisir et al. 2009, 424-425; Nielsen 2012). According to Nielsen (1993), efficiency refers particularly to the performance level after a user has learned how to use the target system properly, whereas Lee & Kozar (2012, 451) emphasize the resource related aspect of efficiency regarding time and effort spend. Tsai et al. (2014, 138) and Lin (2013) note that effectiveness and efficiency constructs are similar to usefulness and ease of use, familiar from adoption theories.

Error rate refers to number of errors that arise when individuals are using the system. It takes account not only the number but also the severity of errors. (Holzinger 2005; Nielsen 1993; Rahman & Ahmed 2013, 41) Users always make some errors, so it is important that they are able to correct them, and this is one dimension of error rate as well (Nielsen 1993). Tsai et al. (2014, 138) suggest that error rate can be integrated to learnability attributes instead of using it as a separate measure, since it also takes account the way the users can cope with the errors. On the other hand, it has been noted that when technical errors or failing in functionality cause inefficiency, users can be disappointed and consider the website as insecure. These feelings in turn can have negative impact on satisfaction. (Calisir et al. 2009, 424-425)

Navigation is a design element that makes it easier for the users to find what they are looking for with components such as menus and links. In addition, it is important that user knows where he or she is in the site while looking for information. When visiting a website, users should be able to see already from the first page, what kind of information or services the site provides and “decide what actions they have to take to achieve their desired result”. (Calisir et al. 2009, 422; Palmer 2002, 153) Navigation has been used as a usability factor in several studies. However, it can be included in the efficiency factor as well, as good navigation provides logical and suitable paths through the tasks, and therefore enhances user’s experience of efficient usage (Calisir et al. 2009, 422). Empirical evidence supports the role of navigation in the perceptions of usability. Palmer (2002) has found navigation to affect the success of a website, and it has been noted that customers prefer navigable online stores (Calisir et al. 2009). Some studies found navigation to be one of the most important determinants of usability (Calisir et al. 2009, 432).

Learnability refers to that users should be able to easily start to work with the application and learn it easily and quickly. It also includes the aspect of how easy it is to become a skilled user of the system. The difference between learnability and efficiency is that learnability focuses on the first times of using the system, whereas when measuring efficiency, users should have some experience of the software already beforehand. Learnability is an important factor, since it is related to user’s first impressions with the target system. Failed learnability can make users to avoid or even stop using the target system. (Holzinger 2005; Nielsen 1993; Rahman & Ahmed 2013, 41) Learnability should be balanced with the target group of the information system, as the applications targeted to expert users can be more time-consuming to learn than ones aimed for wider audiences. In the case of expert users, lower learnability can be substituted with higher performance. (Nielsen 1993)

Memorability means the extent to which users can easily recall how to use the application after a period of non-use. It does not refer to how much users remember of the application when not using it but in particular recalling when using the application again. Memorability is required in order an individual to become skillful user of the target system. Memorability is also an important factor in the case of casual users, since it means that the user does not need to learn to use the application again every time he/she returns to it. (Holzinger 2005; Nielsen 1993; Rahman & Ahmed 2013, 41)

3.2 User Satisfaction

Satisfaction denotes that the application is pleasant to use (Holzinger 2005, 72; Nielsen 1993). It refers to how satisfied the users are with the interface regarding the time used and if the website was considered to be enjoyable to use. In general, it relates to user's attitude toward the system. (Calisir et al. 2009; Rahman & Ahmed 2013). Satisfaction is subjective perception and it can only be measured by asking the users about their opinions concerning the target system (Nielsen 1993). Lee and Kozar (2012, 451) define satisfaction as the comfort and acceptability of a website. Satisfaction has been one of the main usability factors in several studies (Calisir et al. 2009, 425). Lee and Kozar (2012, 451) suggest that satisfaction increases when the website is reliable, security and provides support for the users, such as customer support personnel or FAQ. Calisir et al. (2009, 425) argue that satisfaction is mainly affected by perceived efficiency and effectiveness as well as by emotions and thoughts the user perceives when using the website. They also suggest that satisfaction is particularly important in the non-mandatory usage settings, since the satisfaction with the website is related to revisits. It has been also noted that satisfaction is particularly important when using applications such as games or entertainment, and in the context of home computing (Nielsen 1993).

Wixom and Todd (2005) have combined technology acceptance study with user satisfaction research. They differentiate user satisfaction literature's object-based beliefs and attitudes and technology acceptance literature's behavioral beliefs and attitudes. They theorize that perceived usefulness is determined by ease of use and information satisfaction, which is based on information quality. Information quality is affected by attributes of completeness, accuracy, format and currency. Ease of use in turn is based on system satisfaction, which is determined by system quality. System quality attributes are reliability, flexibility, integration, accessibility and timeliness. Perceived usefulness and perceived ease of use are the behavioral beliefs familiar from technology acceptance study. Information satisfaction and system satisfaction here represent object-based attitudes and information quality and system quality object-based beliefs, common in user satisfaction literature.

Information quality attributes reflect the perceptions regarding the information in the target system. Completeness refers to the level to which the target system provides all essential information needed. Accuracy represents the correctness of the information, in particular from

the user's perception point of view. Currency means that the system provides the latest information, and format refers to the user's perception of how well the information is presented. The system quality attributes determine users' perceptions of the system itself and the way it provides information but not the information itself. Reliability means that the system's operation is dependable. Flexibility indicates that the system is adaptable to user's changing demands, whereas integration refers to that the system enables the integration of data from various sources. Accessibility denotes the ease of accessing the information, or extracting it from the system. Timeliness refers to "the degree to which the system offers timely responses to requests for information or action". (Wixom & Todd 2005, 91-92)

4 PHARMACIES AND ONLINE PHARMACIES IN FINLAND

In Finland, only pharmacies and their subsidiaries and online stores are allowed to sell medicine, and running a pharmacy requires a license from Finnish Medicines Agency (Fimea). The license can be permitted only to an authorized pharmacist. The license is given for a specific area, such as municipality or a part of a city, and the pharmacy can be located anywhere within this area. The locations of the subsidiaries are more regulated. (AFP 2014, 18; Fimea 2011, 3; Finlex 1987).

In 2014 there were 614 pharmacies and 203 subsidiaries in Finland. In the same year, the average turnover of the pharmacies was 3,6 million Euros and they pharmacies had on average a total of 21 full-time and part-time employees. (AFP 2014, 18) The turnover of all private community pharmacies was 2,16 billion Euros in 2013. (AFP 2014, 17) Pharmacists reach around 50 million to 60 million customer contacts a year (AFP 2012). The number of prescriptions dispensed by Finnish pharmacies has been increasing throughout the 21st century. In 2000, there were 36,7 million dispensed prescription, while in 2013 the amount was 51,7 million. The average amount of dispensed prescriptions was approximately 75 000 per pharmacy. (AFP 2014, 18) The prescription medicines account for 81 percent of pharmacies' sales, whereas non-prescription medicine's share is 14 percent and other sales, such as cosmetics, 6 percent. (AFP 2014, 17)

4.1 Customer Satisfaction

The biggest customer group of the pharmacies is over 60 years old people that form over 40 percent of the customer base (AFP 2011). According to a survey (AFP 2014, 11; 16), 61 percent of pharmacy customers were very satisfied with their most recent visit to a pharmacy. The share of customers that were very or fairly satisfied was 95 percent. The respondents are most satisfied with readiness to serve, the professionalism and expertise in pharmacies. In a survey conducted 2010 (AFP 2011), the helpfulness of the staff was considered to be most significant factor causing satisfaction among the customers. In addition, fast service and absence of long queues were important, and especially the significance of the fast service was emphasized more than in the surveys conducted in previous years.

The most significant issue triggering discontent was queuing, which was mentioned by the third of the respondents. Unfriendly or slow service, lack of product or service needed and high prices affected discontent as well but each factor was mentioned by less than 10 percent of the respondents. Third of the respondents was unable to mention even one factor causing discontent with the pharmacies. (AFP 2011) Altogether, according to surveys, pharmacy customers are satisfied with the service they get from pharmacies. In addition, pharmacists are valued among the most reliable professions in Finland, together with professions such as firefighter and nurse (AFP 2014, 11).

The most important services were found to be the medicine compliance check, medicine guidance and generic substitution (AFP 2014, 11). In 2010, only 11 percent of the respondents considered home delivery to be a very important service in a pharmacy and 20 percent considered it to be fairly important. A possibility to buy medicine online was very important for only 4 percent of the respondents and fairly important for 17 percent. (AFP 2011) According to an earlier survey, customers consider the accessibility of pharmacy services to be good, and opening hours are considered to be suitable. (AFP 2011) On average Finnish pharmacies are open 57 hours per week. (AFP 2014, 16)

4.2 Renewal of Pharmacy Business

In 2003 the generic substitution system for prescription medicines was introduced in Finland. It means that the customer has the right to replace the medicine to a similar but cheaper substitute and a pharmacy has to provide information about the alternatives. (AFP 2014, 11; Kela 2015b) In addition, the reference price system was established in 2009 to support substitution system. The reference price system concerns certain prescription medicines that customers can get reimbursements from and the amount of reimbursement is based on the reference price. There are several reference price groups which each consists of the medicine that can be substituted for one another. All medicines within one reference price group have the same price even though there would be difference in their market price. The reference price in turn is set based on the price of the cheapest substitutive product within the reference price group. (Kela 2015a; Kela 2015b)

In the beginning of the year 2012 over 45 percent of the prescription medicines were within the generic substitution system. The generic substitution and the reference price system have decreased the prices of medicines. Until the end of the year 2011 the accumulated savings were 720 million Euros, of which 330 million Euros were savings for the customers and 390 million Euros were saved in the reimbursements of medicines. (AFP 2012)

Pharmacies cannot set the prices for medicine but the Council of State determines a medicine tariff that the retail prices are based on. The retail and wholesale prices are same for all community pharmacies and the wholesalers cannot offer any discounts. The tariff for medicine is counter progressive, hence the sales margin decreases when the wholesale price increases. (AFP 2014, 19)

Electronic prescription is “a prescription for medicines issued and signed electronically by a doctor” (Kansallinen terveystieteiden tutkimuskeskus 2015; Finlex 2007). The electronic prescriptions are in a national database called the Prescription Centre, which is controlled by the Social Insurance Institution of Finland. Because the prescriptions are in a centralized database, any pharmacy can dispense the prescribed medicines. (Kansallinen terveystieteiden tutkimuskeskus 2015)

The law concerning electronic prescriptions came into effect in 2007 (Finlex 2007). All prescriptions (except medicine for animals) has to be electronic in 2017 and paper and telephone prescriptions can then be used only in emergency situations or if there is a technical malfunction. By the end of the year 2014 already 92 percent of the prescriptions was in electronic format. (AFP 2014, 15) The purpose of the law was to improve the patient safety, since doctors and pharmacies can now easily check the whole medicine regimen of the patient and more effectively prevent adverse medicine interactions and overlapping in medication. (Kansallinen terveystieteiden tutkimuskeskus 2015; Finlex 2007)

4.3 Online Pharmacies and Their Customers

It has been allowed to sell other products of pharmacies, such as vitamins and cosmetics, online already before, but online trade of over-the-counter and prescription medicine became possible with the new medicine act in the beginning of 2011 (Finlex 1987). The first online pharmacy started selling over-the-counter medicine in the fall of 2008 with the supervision of

Fimea (Heinonen 2013) but the proper online selling of over-the-counter medicines started after the new medicine act in 2011. According to a law, only private community pharmacies and the pharmacies of University of Helsinki and University of Eastern Finland can offer online services selling medicine and prescription medicine, since the license to run a pharmacy is required. Fimea is the authority controlling the online services and opening an online pharmacy requires a notification to Fimea. (Fimea 2011, 3) Having a pan-European logo can recognize legal online pharmacies. The logo is also a link to a list maintained by the Fimea, containing all legitimate Finnish online pharmacies. (Fimea 2014) In September 2015 there were 110 legitimate online pharmacies in Finland (Fimea 2015), while in 2012 the number was 22 (Heinonen 2013).

As mentioned earlier, the new medicine act in the beginning of 2011 made it possible for the online pharmacies to sell prescription medicine as well (Finlex 1987). However, it was not possible in the wider range until the electronic prescription became more common. Before the electronic prescription, pharmacies needed actual paper prescription to be able to dispense the medicine or a phone prescription from a doctor. With the launch of electronic prescription, selling prescription-only medicine online became practicable, since any pharmacy can get any prescription from the Prescription Centre. (Kansallinen terveystarkistus 2012a; Kansallinen terveystarkistus 2012b; Kansallinen terveystarkistus 2012c) The first two pharmacies started to sell prescription medicines through their online services in November 2012 (Helsingin Sanomat 2012). In September 2015 there were six online pharmacies selling prescription medicines. In April 2013 there were also six online pharmacies that sold prescription medicines (Heinonen 2013), so the number of such services has not increased in last two years.

Online trade of prescription medicine is strictly regulated. For instance selling intoxicating medicine and products demanding cold storage, such as insulin, is prohibited. When selling over-the-counter medicines, the online pharmacy must provide an opportunity to get information on the medicine and its proper use from a pharmacist. Consultation with a pharmacist is mandatory when prescription medicines are bought online. In practice, the consultation is done by telephone or over a web service. (Fimea 2014; Finlex 1987)

In 2008, The Finnish Pharmacists' Association and The Consumers' Union of Finland examined the perceptions concerning buying medicine from Finnish online pharmacies.

According to the finding, at that time over 80 percent of the respondents would buy their medicine primary from brick-and-mortar pharmacy even though online pharmacies would be one official channel for purchasing medicine and over 40 percent considered developing online channel to side of brick-and-mortar pharmacies not important at all. Only 25 percent found the developing of the online channel important. (Heinonen 2013)

Of the respondents, 25-49 years old, affluent people living in big cities had the most positive attitude towards online pharmacies, whereas over 50 years old working class or retired persons with lower income and living in small cities, on rural areas or in Northern Finland were most negative towards purchasing their medicine online. This means that those who have best possibilities to use brick-and-mortar pharmacy, also have positive attitude towards online pharmacy, and those who would benefit most of using online distribution channel, for example because of long distances, have negative attitude. In 2008, approximately 40 percent of respondents would have bought from online pharmacy over-the-counter medicine, 30 percent prescription medicine and third of the respondents would have not bought anything from online pharmacy. (Heinonen 2013)

In the same study, the most important features of online pharmacies were considered to be medicine safety, privacy policy and the possibility to get professional assistance for example when choosing the medicine, which was found important by over half of the respondents. The most wanted services were the medicine compliance check, medicine guidance and possibility to compare prices. (Heinonen 2013)

Heinonen (2013) has done a survey concerning the buying motives of the online pharmacy customers. The survey was done in 2010 and therefore neither over-the-counter or prescription medicines were not available from the online stores at that time. Easiness (88 %), no need to hurry (74 %) and 24/7 availability (69 %) were considered to most important reasons to use online pharmacies. In addition, possibility to compare prices and products, affordability and lack of queuing was mentioned by 30-40 percent of the respondents. Intimacy, broad product range, amount of product information, familiarity of the online store and possibility to product returns were considered as less important factors. The same study suggests that the most significant motivation for selecting a certain online pharmacy is the ease of use, which was mentioned by 59 percent of the respondents. Also good value for money (~45 %) and reliability (34 %) were found to affect the selection. Specific product

range, method of payment, broad product range and ease of product returns were found to be less important reasons. (Heinonen 2013)

Approximately 90 percent of the respondents were women, which was partly due to the fact that in online pharmacies targeted in the study, only 25-30 percent of the registered customers were men. This may affect to the results, and it is noted in the study that the results are in line with previous finds suggesting there is a difference in the online buying motivation between men and women. As men use online stores to reach wider product range and to be able to compare the products and prices, women consider flexibility in their use of time more important. According to results, 49 percent of the respondents had found the online pharmacy they were registered to with search engines and 24 percent based on advertisement. (Heinonen 2013)

4.3 Online Buying Process of Prescription Medicines

Since trade of prescription medicine is strictly regulated, the design and buying process of online services for purchasing prescription medicine differs slightly from the regular online stores. Before a customer can order a prescription medicine, he/she must register to the online service; buying a prescription medicine (or over-the-counter medicine either) is not possible without a registration. In addition to the registration, customers must verify their identity and this is done with online banking credentials after choosing the prescription medicines they want to purchase. The purpose of this two-staged verification is to make sure that the customer buying medicine is who he/she claims to be.

The beginning of the buying process for prescription medicines varies in the online pharmacies, as in some the customer is required to register at first but in some online pharmacies it is possible to start by choosing the prescription medicine. In one online pharmacy customer need to choose first, how he or she wants to contact with the pharmacist. In any case, the customer needs to register before the process can go further. There also different methods for choosing the products as well. In some online pharmacies customer can choose the prescription medicines to their shopping cart the same way as when ordering any other products. However, in some online pharmacies customer needs to write the medicines in

question in a message field or tell the needed medication directly to a pharmacist. After these options, the pharmacist adds the medicines to the shopping cart.

As mentioned earlier, the law states that consultation with a pharmacist is mandatory when buying prescription medicine. The majority of the online pharmacies provide this consultation by phone but other options such as online chats and internal messages included in the system are offered as well. The role of pharmacist is required also because the online pharmacy interfaces are not connected to the Prescription Centre, and a pharmacist needs to contact the database and actually dispense the prescription. After the contacting with a pharmacist, the customer can now add other products to the shopping cart if needed and pay the purchases.

The final difference between regular online stores and online pharmacies concerns the shipping of the medicine. According to the regulations regarding the storage of medicine, they cannot be stored under the temperature of 15 degrees of Celsius. That is why it is not possible ship medicine in letters, since they can for example lie in mailbox where the temperature cannot be controlled. Online pharmacies provide shipping only on as a parcel or the customer can pick up the purchased medicine from the brick-and-mortar pharmacy.

5 EMPIRICAL ANALYSIS

This chapter provides the overlook for conducting the empirical research. First, the data collection method and sampling of the study is presented. Then the respondents of the study are introduced more in detail. The third part of the chapter provides the results of interviews and observations. The results are divided into three parts based on the research questions. Therefore the results gained before using the system, during the usage and after the trial part are provided separately. The names of online pharmacies are marked as x and y in the quotations. These markings do not indicate any specific online pharmacies, i.e. online pharmacy x is not the same one in all quotations.

5.1 Data collection

The empirical data was collected with a combination of semi-structured interviews and observation. The informants were interviewed individually and the interviews were recorded. The data collection was conducted in two parts: First three interview-observation sessions took place in March 2015 and the latter two sessions in October 2015. One informant was interviewed in two parts, both in March and October. There had been changes between these two interview sets, as one more online pharmacy started offering prescription medicine, and the design at least one store was changed.

Sampling of the respondents in the qualitative study should be purposeful, since the sample size typically quite small and the aim is to gain a versatile understanding of the phenomenon (Eskola & Suoranta 1998, 18). In this study, the sampling of respondents is based on their use of pharmacy services, their age and willingness to try the online pharmacies. The respondents were approached through the personal relations of the researcher. Sample size in qualitative research is not unambiguous issue. One way to solve suitable sample size is to use saturation. Saturation refers to a point in data collection when new or relevant information is no more gained with more data. (Eskola & Suoranta 1998, 62-63) In this study, four respondents were interviewed and the sample size was considered to be enough, since the same issues started to rise in the interviews and observations. In addition, the bigger sample size was not possible, since the trial parts of the data demanded extensive analysis.

The data collection had three stages. In the first part the respondents were interviewed of their initial beliefs and attitudes towards the service. The interview consisted of the background information and constructs affecting the possible adoption prior to the trial of the service. After the interview the observation phase took place. The respondents were given instructions to search for a service where they could buy prescription medicine online and to explore how the service is used. Then they had a possibility to try to use the service but this part was not mandatory, since they would have needed to register to the service, and it could not be required by the researcher that the respondents would give their personal information to the companies if they were reluctant to. In addition, all the relevant information concerning how to buy prescription medicines was available on online pharmacies also without the registration, so the development of perceptions regarding the service did not require the registration. The respondents were asked to explain, what they were doing the whole time and also comment on what kind of thoughts and feelings the process aroused according to think-aloud data collection method. In the third and final part questions were asked regarding their perceptions of the service and if their expectations had changed during the information search and trial.

5.2 The Respondents

There were four respondents interviewed in the study, and the information of them is provided in Table 1. The respondents were given code names in order to presentation of the results to be clearer. Two of them were aged between 60-70 and two between 25-35. Two of the respondents were male and two female. All the respondents lived in the city, three in a city over 100 000 inhabitants and one respondent in a smaller city. In addition, the two older respondents spend quite a lot of time in their country house on rural area.

Code Name	Gender	Age group	Computer skills	When conducted
Linda	Female	65-70	Moderate	March
John	Male	65-70	Moderate	March
David	Male	30-35	Professional	March & October
Mary	Female	25-30	Experienced	October

Table 1: The Respondents

All respondents visit a brick-and-mortar pharmacy on a regular basis. One of the respondents visits pharmacy approximately five times per month, which was the shortest interval, whereas the longest interval reported was once in three months. Three of the respondents buy prescription medicine regularly, typically 3-4 times per year, and one respondent buys prescription medicines only occasionally, once or twice a year.

Three of the respondents use computer and internet almost in daily basis, one of the respondents a little less often but still regularly, and all were familiar with online stores and had purchased something online. Internet was used most for instance for online banking and paying bills, searching for information, using email and reading papers. One respondent has a job related to computers and uses online stores frequently at work, hence he considered himself as an adept computer user. In general, two younger respondents evaluated themselves as more experienced and skillful with the computers than the older respondents, who described themselves as moderate as their computer skills. When asked whether they need assistance when using computers, both younger respondents noted that they are usually ones helping others. Older respondents noted that they occasionally need some assistant with computers.

5.3 Pre-Usage Beliefs

The initial beliefs of the respondents were examined with interviews. The respondents did not have any knowledge concerning the online pharmacies before the interviews, and none of them had visited online pharmacies beforehand.

5.3.1 Perceived Usefulness and Motivation

The respondents found the main benefits of online pharmacies to be the possibility to save time and ability to conduct the purchase at home. Online stores save time, since the customer does not need to queue or take time to move from home to the brick-and-mortar store. These findings are in line with the suggestion that some of the main factors affecting perceived usefulness are the ability to work more quickly, effectiveness and making job easier (Davis 1989).

“Well yes, it will save you time, at least. That you don’t need to go anywhere specifically for pharmacy.” - Mary

The respondent with code name David said that buying prescription medicines online would save the trouble of finding the nearest pharmacy. He clearly did not have stable relationship with any specific pharmacy, and his answer implied that he did not remember the locations of the nearest pharmacies, even though he used pharmacy services from time to time. David also noted that since the pharmacies were located somewhere in the city centre, he did not only need to find the pharmacy but a free parking space as well. Flexibility, which is often mentioned as a benefit of online stores in general, was mentioned as well:

“Of course (it would be easier) if you can check out those things at any time. And certainly the purchasing as well, so that it would be possible any time you just remember, not only when you are on shopping trips.” - David

Prior to familiarizing themselves with the online service, the respondents hoped or assumed that it would be possible to get the medicines home-delivered. Three of the respondents remarked that buying prescription medicine online would be very useful if the nearest brick-and-mortar pharmacy would be located far away from home. However, none of them had this situation themselves, as all the respondents had a brick-and-mortar pharmacy near them or near the other facilities they regularly visit. John expressed concern that in the future there could be less brick-and-mortar pharmacies and in that situation online pharmacy would be useful. In addition, John and Linda noted that in the future online pharmacy might be useful, if their ability to move did decrease, as they get older.

As mentioned earlier, some of the respondents had regular medication a year around but that is of course not always the case. Two of the respondents noted that usually the prescription medicines are needed in the case of illness and prior to the purchase a visit to the doctor is needed. This brings two different views on perceived usefulness of online pharmacies, as it would allow the customer to go straight home from the doctor without need to visit pharmacy when ill. On the other hand, in this kind of cases the medication is usually needed right away, so the delivery would need to be quick. Mary noted that shopping online would be also a good thing in case of delicate medicines. It would be easier to purchase medicines that you do not want other people to see, if you can do in privacy at home, since there is no risk of meeting unwanted acquaintances while doing so.

Especially David mentioned the possibility to check and examine own medication as a trigger factor that would make the service to be useful. The respondent considered it to be clearer, if the users could see the prescription by themselves. In addition, Linda hoped that the service would enable this as well.

“...and then if you could see all the medicines (one has), then it would be somehow clearer. You would know what prescriptions you have and what you don't have, and when you need to get them.” - David

It emerged in the study that visiting pharmacy could have other meanings for customers than just getting the medicines. In particular Linda praised the service and the personnel of the pharmacy the respondent regularly visits, and the interview implied a personal attachment created regarding that pharmacy. As noted in the theoretical part, shopping can include different motivation than just purchasing the intended things. In addition, it was suggested that perceptive usefulness is formed based on comparison of what system is capable of doing and what an individual needs to get done (Venkatesh & Davis 2008, 277-278). Even though online pharmacies require customer to personally contact the personnel in order to purchase prescription medicines, it may not be enough to fulfill the need of personal connection and social aspects of the buying process relevant for certain customers. Linda also stated that it is much more pleasant to transact with actual people than with computers, which implies that social interaction is considered an important factor as well, not just purchasing the prescription medication needed.

This was an issue that set a clear distinction between the respondents. David was only one who considered a face-to-face interaction with the pharmacy personnel as a burden but other three respondents saw it as a beneficial side of brick-and-mortar pharmacies. Especially for Linda it was an important thing but also John and Mary expressed the need the possibility to ask more detailed instructions from a pharmacist. David, however, was more interested to search that information online by himself, as he implied that he is used to do at his work and on his spare time as well.

In particular older respondents expressed that they are very satisfied with the service they are getting from their pharmacy, and mentioned this as a reason why they did not find the service to be useful. This finding is in line with the surveys of AFP mentioned earlier that show the pharmacy customers to be mainly happy with their pharmacies (AFP 2014; AFP 2011). However, this may have a significant effect on perceived usefulness, as if customers are completely satisfied with the current state of their pharmacy services, it is less likely that they would find the online channel useful.

Respondents were also asked, how significant they found the benefits they listed and they were all quite hesitant about the question. The most of the respondents did not find the service to be useful in their daily life, and none of them was sure that it would actually be useful. The most positive perception of the usefulness was stated as following quote:

Well, maybe the benefit would probably be saving time. So yeah. Basically yeah... - Mary

David concluded the analysis of potential usefulness stating that if using the online pharmacy would more effortless than visiting brick-and-mortar pharmacy, then the service would be useful. This is exactly the same thing IS adoption theories and study has implicated: the perceived usefulness is affected by the expected amount effort that using the application demands, i.e. perceived ease of use.

5.3.2 Perceived Ease of Use

All the respondents expected the service to be easy to use, since they all were familiar with shopping online and had used several online stores beforehand. All respondents expected the online pharmacy to be similar with the design of other online stores, which also were considered to be easy to use.

“Well, so far I have been able to use all online stores, so I think I will manage.” - David

Only Linda noted that she might need help when using the service first time but that if the help did not exist, she might manage without as well. The respondents also expected that they would learn how to use the service quite quickly. However, David noted that it depends on whether the interface is done well enough.

The respondents were not able to tell what could be difficult in using the online pharmacies. The only issue of concern was the selection of the right medicines, however it was noted that the products bought from online pharmacies would mainly be familiar and the ones that the respondent usually buy from brick-and-mortar pharmacy. In addition, Mary was concerned with the selection of appropriate package size would be difficult. Based on the respondent's past experience, even doctors and pharmacists had had troubles with that. In addition, the

package size has effect on price, and Mary was not willing to spend her time calculating, which option would be most affordable.

All respondents were confident that the online pharmacies would have clear and helpful instructions to follow, although one respondent noted that hopefully the service is executed so well that instructions and help would not be needed. They were neither concerned with the possibility that something goes wrong when they are using the online pharmacy. Mainly they were certain that if some error would occur, it could be corrected. In particular the older respondents were sure that the errors could be corrected with a visit to *their* brick-and-mortar pharmacy. David noted that errors would not be that crucial, if they could be corrected by the user but that it would be frustrating to have to call somewhere.

However, the most of the respondents clearly expressed that they would not have patience for difficulties and errors occurring. Especially John stated that an error would immediately finish the online pharmacy visit and that the online pharmacy would not be given another try.

“I don’t know what there would be to be afraid of but I won’t bother to watch it for a long time. If it doesn’t begin to pull off, I think I just let it be then.” - John

David stated that especially complex and poor interface would be a significant issue. As the respondent has used a lot of online services and online stores both at work as at home, he was not willing to spend time on searching things from the service but prefers services that function well and easily.

”And it’s probably because you have used them so much, that you don’t stand to look for too long. And then you don’t want to use the system anymore.” - David

5.3.3 Social Influence

Based on the interviews social influence appears not to be an important determinant of intention to use online pharmacies, which is in line with what was theorized earlier in this study. Social influence is not expected to be a significant determinant if the adoption is voluntary (Venkatesh & Davis 2000, 195) and the action in question is considered very personal and sensitive (Oliveira et al. 2014, 698). The respondents stated that the opinions of their important others do not matter in this case.

“If I decide that I’ll start to buy (prescription medicine online), others have nothing to say about it.” - Linda

However, this part of the study was conducted with interviews, so this result indicates only what the respondents say and the actual behavior regarding social influence cannot be examined. On the other hand, when asked if the people they know already used online pharmacies, none of the informants were able to tell this. Some of the respondents said that they have not heard that anyone would have used online pharmacies but it was also implied that this might be a subject that is not talked about.

In addition, it was noted that nowadays it is so common to use online services that it does not enhance one’s status or image among the other people.

“Well, there’s nothing special about it. We already buy everything online.” - Mary

This also implies that using online pharmacies would not be affected by social influence, since using online stores is seen as ordinary thing. On the other hand, as online pharmacies are relatively new phenomenon, they are not yet so common that not using them would be seen as odd either.

5.3.4 Trust and Risk Perceptions

All the respondents expressed trust toward Finnish pharmacies and thus toward online pharmacies as well. This is in line with the findings that Finns consider pharmacies and pharmacists to be very reliable (AFP 2014, 11). The fact that online pharmacy would be Finnish was considered as crucial factor, and John even mentioned that he would not use foreigner online store, especially pharmacy. Similarly the respondents trusted that the delivery would be reliable as well, only one respondent expressed a bit of concern with the delivery. David mentioned that the medicine packages could for example break up during the delivery. However, this concern was not big enough to prevent him from using the service.

Mostly the respondents were not concerned about information security. They noted that it is common to give your personal information to online stores and that online stores are well protected. For example Kela (Social Insurance Institution) was mentioned as a comparison: you can use its services online and it requires entering your personal information but it is considered totally secure.

“Well, as I said, there are so many other online services that require your personal information, and I trust that they are secure as well, so that there is no disclosures.”

- Mary

David was the only one who was even on some extent concerned with security issues.

I am a bit suspicious about their security. I'm sure pharmacies are reliable but the technical implementation...”

However, the respondent was sure it could be seen quickly whether the services are safe or not. He also stated that if the online pharmacy would appear to be complex and difficult to

use, it would also affect the respondent's perception of the online pharmacy's reliability. This finding is similar to prior studies that suggest that usability has an effect on gaining and sustaining the customer's trust (Calisir et al. 2009, 422).

Interviews implied that customer service was perceived as a benefit for brick-and-mortar pharmacies, since it was seen easier to ask questions from the personnel considering the medication. Getting instructions from the pharmacists were considered important, which is supported by the findings of prior studies. As mentioned earlier, medicine compliance checks and medicine guidance were considered to be the most important services in the pharmacies (AFP 2014, 11). In addition, some of the respondents were concerned that they would not get them from online pharmacy, and even a visit to brick-and-mortar pharmacy would be needed anyway.

"... it is actually quite nice to visit (a brick-and-mortar pharmacy). You get there the instructions from the pharmacist and you can ask anything if there is something that's unclear. If you buy it online, I'm sure you get some instructions but if you then have something to ask, you may need to go a brick-and-mortar pharmacy anyway."

- Mary

Thus, the customers may perceive it as a risk that the online pharmacies might not provide sufficient information about the medicines and medication. Perceived risk has been found to influence negatively perceived usefulness (Chan & Lu 2004, 36) and an intention to shop online (Tong 2010, 753-754), and even postpone the adoption (Chan & Lu 2004, 24), so this is an important issue. It should be noticed that regarding the risk, the customer's perception is the key issue rather than the fact whether the risk actually appears or not (Glover & Benbasat 2011, 48).

5.3.5 Behavioral Intention

Linda and John had no intention to use online pharmacies for purchasing prescription medicines. They were even quite reluctant to try to use the service without any purchases. The younger respondents were more positive regarding the usage. Mary was hesitating the usage, as she did not perceive any special usefulness in it despite the possibility to save some time.

“It might save time and trouble but I feel that I might still go to a brick-and-mortar pharmacy. Somehow it feels a bit safer or something. That there’s another person from whom you can ask.” - Mary

David stated more clearly that he was willing to use online pharmacies but that it dependent on the service and whether it was good enough. Both Mary and David suggested that the trial would determine their eventual behavioral intention.

“Well, I don’t know (whether I’m going to use online pharmacies in the future). You never know. It might be that after I try it, I want to use it. I don’t know.” - Mary

5.4 Usability Perceptions

After the interview the respondents were asked to search online pharmacies and information, as they would be buying prescription medicines online. As mentioned earlier, they were asked to think aloud and tell what they were doing. In addition to this, their attitude and expressions were observed as well.

5.4.1 Accessibility

The first problem with purchasing prescription medicines occurred instantly after the respondents started the search. All respondents started with using search engines and they used various keywords and combinations. The results of search engines were poor in the empirical studies made in March 2015, as only two of the online pharmacies selling prescription medicines were found in all three trials. In addition, in two of the trials, first search result found was an online pharmacy based outside Finland.

“Now I searched again. And when I went back, I noticed that the first option was to buy abroad. (laughs) So you need to be careful that you choose a Finnish one.” - David

“Online pharmacy, Estonia. That came first. Look, Estonia is here right away. ... On a second place is online pharmacy and Viagra.” - John

The two online pharmacies found were the same ones in every occasion. At the time of trials there were at least five online pharmacies selling prescription medicines, so three of them were not in the first page of search engine, even though one respondent conducted more than one searches. John did not actually even find online pharmacy that would sell prescription medicines, as he ended up on a website of a brick-and-mortar pharmacy. He noted that in a real life situation he would give up the search at that point.

“No. I can't find. How did you find them? Prescription? (searches for a long time) ... You can't find that kind of things here. They are just talking about electronic prescriptions and prescription renewals. So there's no point going there.” – John

The difference between the search findings of different respondents relates to words they used. For example John and Linda used the term “prescription medicines”, which gave as results many regular pharmacies, whereas David used the combination of “prescription medicines” and “online store”.

As mentioned earlier, Linda implied to have a strong relationship with the pharmacy she regularly visits. This came out also when she searched for online pharmacy, as she attempted to find her own pharmacy’s online store.

It is said here that this is how you buy prescription medicines from x pharmacy, from online pharmacy, prescription medicines, pharmacy products... Then there is y pharmacy. But it's not here... How do I find my own pharmacy from here? I don't I guess. There are only these ones. ... Well, it's not very pleasing at all then. - Linda

Next she opened an online pharmacy she was familiar with as a brick-and-mortar pharmacy. However, she was a bit reluctant, as she did not normally visit that pharmacy.

In October 2015 during the second study settings the situation was a lot better, as more Finnish online pharmacies selling prescription medicines were found with the first search in both research sessions. Especially David, who had tried online pharmacies already before, expressed that the accessibility of the services was much better in comparison to the first attempt. He considered for example finding the prescription medicines from the front page to be easier this time. In addition to accessibility, all the online pharmacies the respondents explored were functioning as they were supposed to as well. However, now again on one trial, search engine results offered foreign pharmacy as a second option.

5.4.2 Information Accuracy and Currency

Another problem occurred in the first study settings right after the search, as the first link for Finnish online pharmacy selling prescription medicine led to a page that did not work. At first sight the online store appeared to be good, as there were instructions how to register and use the online pharmacy. However, when the respondents read the directions further, it appeared that it was not possible to order anything, as this function was under construction. This confused the respondents, as they first thought that they could order prescription medicines, and it was not mentioned first that the site was not actually working at that time.

"I can't even open this, this is a bit difficult. Why does it not open from here? No, wait, here it is. Does it open from here?" - Linda

"It is said here quite well in the beginning, all the information is here on the same page. It is said here... oh, well. When you read further, it says that they are working on the possibility to ordering, so it is not possible here after all. So this is a bit misleading." - David

"It did not actually (meet expectations). I was a bit disappointed that x pharmacy's site said that it was under construction. Even though it was the first search result it was not actually there then. It feels immediately a bit strange." - David

The situation got more confusing as with second search David was able to find another link for same online pharmacy. This link led to another page where the purchasing was possible. So the online pharmacy was on function and it was possible to order prescription medicines from there but the first search result led to an outdated page.

Well. Yeah. It's not acceptable that this kind of situation occurs. Let's go back to beginning then. Maybe I was on wrong site. - David

In a real life situation, the online pharmacy would have lost potential customers, as they thought that the store was not in use yet. In addition, after finding the second page, David expressed decreased trust toward that online pharmacy, and its brick-and-mortar pharmacy as well.

The online pharmacy found next in the first study settings was not providing shipping for prescription medicines at that time. This information was not provided in the beginning of the buying process, and David managed to register before noticing that the prescription medicines could not be purchased because the brick-and-mortar pharmacy running the online service was located in different town than he was. Actually, he found the information regarding the shipping only because he started to look for it due to the research situation. In a real life situation the customer would have started shopping without knowing that the shipping in fact was impossible.

This incident let the respondent to assume that buying prescription medicine online was possible only from one's local pharmacy, and the respondent could not find one. Again, in real life situation, he would have given up and remained under false assumption. Because of the study setting, the respondent searched further, and got even more confused, as it was said on the first online pharmacy's site that shipping and home delivery were possible, even though the other online pharmacy stated that it is not possible due to the legislation. He expressed that he had trouble figuring out, which one to believe.

5.4.3 Instructions Accessibility and Information Format

Finding the instructions of how to order prescription medicines was not easy for the respondents either. Linda and John did not find the instructions without help from the online pharmacy they visited. In addition, Mary did not find instructions either from the first online pharmacy but she did find it to be a problem because she was sure that she would know how

to use the service anyway. However, at that point she was under the impression that purchasing prescription medicines would follow same kind of process as in regular online stores. From another online pharmacy she found instructions, and not until then she learned that contacting pharmacist was required. In a real life situation she would have registered and started ordering, and not until then found out what the process included.

David found immediately the instructions from all online pharmacies he visited, and he considered finding them easy and quick. He regarded as best the online pharmacies that had instructions as first thing after choosing the prescription medicines from the home page, not just after registering or logging in. In the first online pharmacy he found the instructions to be a bit confusing but this might also been because of the incident with the outdated page. In particular he mentioned that the instructions in the second online pharmacy to be clear because it had well-structured texts, and big pictures, which made it easier to understand and follow. However, then the inconsistency in the delivery terms overruled these notions.

When David tried the online pharmacies for the second time, he found all the instructions of the online pharmacies to be very clear and informative. He did not actually find anything to be confusing at this time.

"It is said here clearly how this works. In comparison to the last time, when it left a bit vague impression." - David

This might be because he had already visited them once and this way gained experience with them. However, it might be also because there was not any information that he would have perceived as outdated or incorrect. In addition, as mentioned earlier, there had been changes in some online pharmacies, so the interfaces could have actually been better on the second time. Another influential factor might that he now had low expectations, as he was quite disappointed with the services after the first trial.

Mary, however, found most of the instructions to be too long for one to efficiently find the information that was looking for. She did not want to spend time going through the whole text in order to find some specific information, but rather expected to the information to be found

on a quick glance. Both Linda and John found instructions to be confusing and complex, but at this point they both had formed strong negative perceptions toward the service, and did not want to use them anymore, which is likely to influence their perceptions of instructions as well.

When David was registering on one online pharmacy, the service asked permission to retrieve customer's information from the Prescription Centre. The respondent implied that he did not know for sure what the Prescription Centre is, and it was not explained in the instructions. The respondent assumed that it had something to do with electronic prescription and was not really bothered about it but still stopped to think the issue for some time, as it was required to give the permission without any further explanations.

The information about shipping and delivery of prescription medicines were not easy to find for respondents. As mentioned earlier, in the case of online pharmacy providing only personal pick-up for prescription medicines, the respondent did not find the information before starting the order. One respondent noted that the shipping info was a bit hidden and hard to find. The older respondents did not find the shipping information at all. Again, Mary noted that the information was hidden within another information.

“Uh, is there somewhere more about (shipping) prices? At least this is quite complicated because the text here is so long. About the post... I can't find price list anywhere. Paying... awfully long text, no one bothers to pick up information from here. (laughs)” - Mary

5.4.4 The Buying Process

All the respondents noted that it would take some time to register to online pharmacy. David noted that if he would be ill and had for example headache, it would not be nice to wait confirmation emails for registration and such. Mary also said that because registration seemed to take a lot of time, it might be quicker to visit a brick-and-mortar pharmacy. However, some

of the respondents also remarked that the registration would be needed only once, and next time shopping would not be so time-consuming.

“But it is... after you register at first time, then it is very easy to get in. All the information is already there and you don’t have to enter them every time. That’s probably how it is here too.” - John

Linda was reluctant to register at all. This is most likely to do with her unwillingness to use any other pharmacies than the one she considered as her own.

The respondents considered the possibility to call to the pharmacy as the least pleasant option regarding the methods to contact the pharmacy. It was implied that calling was considered to be time-consuming, and it was also perceived to be somewhat unnecessary. Both Mary and David were satisfied, when they found out that some online pharmacies provided online chat for contacting the pharmacist. In addition, Mary found the possibility to call to be satisfactory, when it was promised that the customer would not need to hold on the phone more than one minute. However, the services where the pharmacist would call to customer were found to be unsatisfying, since it was impossible to know, when the pharmacist would actually call.

“(reads the instructions) After you have logged in and verified you identity with online banking credentials, we will get a notice through email. After the verification, our pharmacist will call you and asks more closely about the medicines. ...Ok. This appears to take more time, because in a way you have already ordered a medicine and then there’s email and then they call you. It is not said here how long it will take them to call you, will they call right a way or after a week. (laughs)” - Mary

David disliked most the online pharmacy that required the customer to make up a question and an answer that would be used to verify the customer in the phone. He found it to be complicated, time-consuming and unnecessary.

“Well, I would not use it if it’s this complicated. Why the online banking credentials are not enough, without these questions and calling and everything? Otherwise it would be same just to call them directly, what’s the point of online pharmacy then at all? Expect the paying of course. It should be possible without calling and other ways easier as well.” - David

As the buying process had some many steps, the respondents considered it to take as much time as visiting a brick-and-mortar pharmacy. Especially Linda and John found the buying process to be complicated and time-consuming, which can also be due to the difficulties they had already prior familiarizing them selves with the service.

“This is a bit too complicated. Of course this works if you bother to put effort on it but during the time spent here I would already had visited (my own) pharmacy.” - John

Nevertheless, with both Mary and David, who visited several different online pharmacies, the attitude toward the buying process appeared to vary to some extent between different online pharmacies. This can be noted from their comments when they were reading instructions. When they considered the instructions to be clear and easy to understand, they also had more positive comments toward the whole system and the buying process. Whereas when the instructions were found to be confusing, both respondents commented the whole buying process more negatively. For example at the first trial, David considered the first online pharmacy to be really good when he read the instructions, and implied willingness to use online pharmacies. The instructions in the second online pharmacy he considered to be

complicated, and thus stated that using online pharmacies would not seem to be a good idea after all.

In addition, the respondents perceived as most easy to use the services, which allowed the customer to add medicines to shopping card, since it resembles most the regular online stores.

*“After all, there’s nothing special (difficulties in using).
You really just add everything you want in the shopping
cart, just like in other online stores.” - Mary*

5.4.6 Security and Reliability

The respondents found the email verification for registration is a good thing, since then a customer can be sure that it is not possible to register under someone else’s named. In addition, using online banking credentials for verification was considered to be safe and a good thing in general. In addition, Mary expressed that her perception of security was increased because Fimea and its supervision was mentioned in the online pharmacies.

*Well, if it’s some many times verified and to addition you
have to even call, it has to reliable. But I consider it to be
too complicated. - John*

When David registered at online pharmacy at the first trial, the service demanded to set a password with at least five characters. The respondent was not totally satisfied with this, as he questioned whether a keyword with only five characters would be secure enough when dealing with such delicate information as one’s medication. He also noted that at least of the online pharmacies he visited provided well facts about the personal information security regarding the registration. It was explained for what the information would be used for and for example that it would not be given to any third party.

Mary implied that her perceptions of security and trust varied between different online pharmacies. However, she was not able to say, exactly why some online pharmacies appeared to be safer than others. One factor was that similarly to Linda, she found the online pharmacy that she knew as a brick-and-mortar pharmacy too to appear more trustworthy, but the variation of the trust was clearly related to the interface of the service as well.

“This x online pharmacy appears to be a bit better anyway. More reliable. I don’t know why. This y online pharmacy is somehow disorganized. How can I get back to the front page for example? There’s not any front page tab or anything. Oh, there it is. Confusing.” - Mary

5.5 Post-Usage Beliefs and Perceptions

The third sub research question aimed to find out, what kind of beliefs and perceptions customers have after they have used an online pharmacy, and whether the beliefs have changed. This can be examined with the concepts of confirmation and satisfaction, as provided in the theoretical framework.

5.5.1 Perceived Ease of Use

The initial expectations the respondents had concerning perceived ease of use were based mainly on their prior experience with other online stores. They considered the online stores to function largely on same manner, and anticipated the online pharmacies to be similar to those. Since all the respondents had used online stores, they expected to found the online pharmacies easy to use. These expectations were not confirmed, as the respondents mainly found the online pharmacies complicated to use.

"This was a disappointment! It wasn't that simple after all. Of course, it would be possible (to use the system) if you would call the pharmacy but I won't start to do that now." - Linda

The respondents stated already prior the use that they would not tolerate errors and complexity. This might also be because using online stores are common, that clear expectations regarding the usability exist. Online stores are nowadays quite easy and quick to use, and there are so many options that the customers need not to tolerate poorly executed ones.

One reason why the expectations were not confirmed is that the buying process differs from the regular online stores. However, since there were several other problems with the services, it is challenging to establish, how big share of the perceived difficulty is due to the different buying process. Mary and David, who both tried the services when there did not occur any outdated pages or incorrect information, had more positive perceptions of ease of use. Linda and John, as well as David on his first trial, found the services to be too complicated to use. This may imply that the usability of the services had in fact got better, as there had been changes done in the services.

In addition, the respondents' computer self-efficacy and prior experience with computers in general may affect the perceived ease of use. Mary and David, who were both more experienced and confident about their computer skills, had more positive perceptions of the ease of use than less experienced Linda and John. Another explanation might be found from personal differences as well. Venkatesh and Bala (2008, 278) have suggested that computer playfulness is one of the general beliefs determining perceived ease of use, and that it represents intrinsic motivation. From the beginning David stated that it would be pleasant, interesting and fun to try the online pharmacies. Other respondents did not imply or appear to be enthusiastic about the trial of the service, and in particular Linda and John hesitated to try the service but Mary was not that excited neither. It might be that David's attitude toward computers can be associated with computer playfulness. He was eager to try to services, and in addition he was the only one willing to register in online pharmacies even though he was not going to buy anything but rather just for fun.

Despite what is the reason for variety on the perceptions of the ease of use, the variation itself suggests that the buying process is not the only factor determining perceived ease of use. David actually said this aloud, as he noted that even though the buying process is difficult the online pharmacies themselves were easy to use, and Mary implied this as well. It was clear that in the first study settings the most important factor affecting disconfirmation was the system and information accessibility, and errors the respondents conducted related to it. Lind and John both had negative beliefs concerning online pharmacies already in the beginning, so these errors confirmed their expectations, and after that they were not willing to change their perceptions.

David noted that instructions concerning how to use the services and how the buying process goes exceeded the expectations he had beforehand. As mentioned earlier, David tried online pharmacies two times, both in March and in October. On the second time, his perceptions concerning the instructions and the buying process were more positive than on the first settings. This can be due to the experience gained with the system. However, he noted in the beginning of the second trial that his expectations were extremely low, since he remembered the difficulties that occurred last time. Actually he did not remember at all the positive comments he stated about the interface itself that time. Thus, he had negative expectations and the positive perceptions were really high in comparison with what he was expecting, and he was really satisfied with the services.

5.5.2 Trust and Risk Perceptions

The only risk perceptions the respondents had were related to the medicine guidance, as some of the respondents were concerned that it would not be as easy to get information from pharmacists in online pharmacy than it is in brick-and-mortar pharmacies. This risk perception was not confirmed as the respondents found out that they would contact with pharmacist in online pharmacy as well. However, at this point the respondents did not actually consider this as a positive factor but it was rather connected with the complexity of the buying process.

All respondents had positive initial beliefs regarding the trustworthy and reliability of the online pharmacies. They expressed trust against the brick-and-mortar pharmacies and expanded this trust also to the online services. Only David had some concerns regarding the security of the online services, which might be due to his profession related to IT. These initial beliefs were confirmed on basis of the perceptions of security. However, as mentioned earlier, Mary found one online pharmacy to appear more trustworthy than another, at least partly because of the user interface. Similarly to the prior research (Calisir et al. 2009, 422), this implies that customer's perceptions of usability and reliability can affect the perceived trust toward e-vendor. If the perceptions of usability are negative, it can decrease the trust toward e-vendor as well. Nevertheless, David also implied that problems he had with using the online pharmacy might alter the trust perceptions he had toward the pharmacy operating the service. When the first online pharmacy he tried was not functioning at that time, he wondered how it is possible, since the site indicated otherwise and the e-vendor operating the online pharmacy was a large pharmacy that should be able to run things smoothly.

5.5.3 Perceived Usefulness

Similarly to the perceived ease of use, the initial beliefs concerning perceived usefulness were connected to the respondents' prior online store use. The expected benefits gained from online pharmacy use were mainly related to saving time and effort. However, these initial beliefs were not confirmed, since the services were considered to be difficult and complicated, and online pharmacies were not so quick to use, as the respondents anticipated. The influence of perceived ease of use on usefulness has been found in many IS adoption studies, and it has been theorized in several adoption models, such as TAM (Davis 1989) and TAM2 (Venkatesh & Davis 2000).

However, for example David noted that using the service might still save time, as one need not to queue in a pharmacy, and shipping options included automated parcel points that he understood to be free from queuing. Another significant issue that disconfirmed the time saving was that the shipping of the purchased medication could take several days. This is a crucial disadvantage in the case where the customer needs the medicine on the same day. Nevertheless, if customer has regular medication, the need of the medication can be anticipated, and the shipping time is an issue.

Again after the trial, all the respondents noted that the service would be useful, if the distance to the pharmacy would be a problem. And again, none of them had this situation at hand.

I still consider this to be useful for someone with long distances. Very useful in that case. But not for someone who lives nearby the services.” - Linda

“I mainly got the feeling that is this really useful. If I go and pick up the parcel from post office, on the same trip I could go to pharmacy and get the medicine from there. Of course if you live somewhere in a remote village where there’s no pharmacy nearby, then it’s a good service. You can order the medicine to your local grocery store (where the post office is) but not in here where there are pharmacies almost on every corner.” - Mary

Some of the respondents anticipated that online pharmacies would provide a possibility to view and check up one’s prescription and medication. These expectations were not confirmed, as it is not possible to transform information from the Prescription Centre to the online pharmacy. Actually these two systems do not interact in any way, but the pharmacist is the link between them. This is due to regulations concerning the access to the Prescription Centre. However, customers can see their own prescriptions and other medication information online directly from the Prescription Centre. At least one of the online pharmacies provides a link to the Prescription Centre but none of the respondents noticed it.

In some studies social influence has been found to be a determinant for perceived usefulness. However, in the interviews it appeared that social influence would not be a significant factor in this context. The prior findings regarding for example online banking (Chan & Lu 2004; Oliveira et al. 2014) are contradictory, and it cannot be stated that social influence is insignificant in this case either, as the results rely on the interviews and what the respondents have said about it. However, it was implied that online shopping is now considered so

ordinary behavior that an individual does not gain any social status because of it. And on the other hand, as online pharmacies are relatively new phenomenon, they are not yet so common that not using them would be seen as odd either.

It was theorized earlier that perceptions of price value would affect the behavioral intention of the potential customers. In this context, shipping costs can be seen to represent price value, as they are the cost that customers have to pay more when shopping online instead of brick-and-mortar pharmacy. The respondents found the shipping costs for prescription medicines to be surprisingly high. It was noted in particular that the shipping cost might be the same as the price of the medicine itself. Social Insurance Institution provides reimbursement for the most of the prescription medicines, so the cost for the customer can be quite low. For example David noted that if he had only one prescription medicine to purchase, he would rather go to a brick-and-mortar pharmacy because of the high shipping costs.

Especially the higher price for home delivery was considered to be significant issues, since the home delivery was one of the most important benefits expected from online pharmacies. Some respondents noted that if the medicines was not be delivered at the door, it would be same to go to a brick-and-mortar pharmacy, as you needed to pick-up the parcel from somewhere anyway. They implied that both post offices and pharmacies are located in the same areas, so it does not matter for them, which one they visit.

The younger respondents considered it to be possibly a good alternative that they would buy the prescription medicines online but pick them up from the pharmacy by themselves. This would save them some time, as they would need not to queue or wait the personnel to submit the prescription, and the medicines would be already paid as well. However, they both noted that it was not sure there would be no queuing in the pharmacy anyway in order to get the paid purchases, and it might be that shopping online would not have that benefit either.

5.5.4 Satisfaction and Continuance Intention

Since the respondents' expectations were mostly not confirmed, especially regarding the perceived usefulness and perceived ease of use, they were not satisfied with the service. Only exception was David's second trial, which left him more satisfied with the online pharmacies.

Linda and John did not have intention to continue to use the service, which is not surprise, since they did not have initial behavioral intention either. The trial did not confirm their already low expectations and they were really dissatisfied with the online pharmacies.

“No, I’m not going to (use the service). Would not even come to my mind.” - John

Mary and David, however, did not fully exclude the possibility to use online pharmacies. David said that he might actually use the service sometimes, as he was quite satisfied after the second trial. However, he still had doubts concerning the perceived usefulness of the service. Mary’s continuance intention was not very high, and she expressed just that she might use the service in the future. As David, she did not find the service to be useful in her current situation of life.

“I don’t know (whether I’m going to use online pharmacies in the future). Maybe if we move to a remote village (laughs) or I will run into a situation that it easier to order for some reason. Maybe. At least now I know these exist.” - Mary

6 DISCUSSION

Buying prescription medicines from an online pharmacy differs from shopping for example clothing or other usual everyday items from regular online stores. The legislation sets demands for the buying process because stronger verification of the customers and discussion with a pharmacist are required. The results imply that this has an effect on both the customers' perception and adoption process. Foremost the influence is due to the fact that customers base their expectations on their prior experience with regular online stores, and anticipate the purchasing of prescription medicine to be similar to it.

The results of this study indicate that the adoption of online pharmacies is to a great extent influenced by usability. Usability affects perceived ease of use, which is clear, as these construct are theoretically overlapping. Through perceived ease of use the usability has an effect on perceived usefulness as well, since the effort needed to conduct a certain task partly determines how great the benefits of the behavior are felt to be. In addition, the results imply that usability impact also the trust perceptions toward the e-vendor, which is consistent with the prior studies as well.

Perceived usefulness has been constantly found to be the strongest predictor of behavioral intention (for example Davis et al. 1989; Venkatesh et al. 2003). Thus, if there is a lack of motivation and perceived usefulness regarding the purchases of prescription medicines from online pharmacies, the adoption of the service might be impossible. In this study as well the respondents explained their intention to use or not to use the online pharmacies with their perceptions of service's usefulness. The results indicate that pharmacy customers are mainly satisfied with the service they get from brick-and-mortar pharmacies, and they might be struggling to find the benefits of using the online channel. Therefore not even their initial perceptions of usefulness appear to be strongly positive. Perceived usefulness diminishes more after the initial expectations derived from the benefits of regular online stores are not confirmed because of the differences regulations set for the online pharmacies. This can cause dissatisfaction, which leads the rejection of adoption and intention to not continue the usage.

Nevertheless, the results do not indicate that the usefulness would not exist at all. Online pharmacies can provide benefits for some customers; for example some customers may

perceive face-to-face customer service and visiting brick-and-mortar stores demanding a lot of effort. Usefulness is examined in the adoption research precisely with the perceived usefulness construct for a reason: it does not matter, what the objective usefulness is if the customers do not perceive or notice it. Similar to this some adoption models theorize that one determinant of perceived usefulness is result demonstrability (Venkatesh & Davis 2000). In the context of prescription medicines it can be questioned, whether the online pharmacies have managed to express the benefits of using the service adequately.

For example, prior the use of online pharmacies the respondents were concerned that the service would not provide enough medicine guidance. After they found out that they needed to contact the pharmacist, it appeared that this risk perception would not be confirmed. However, the respondents did not express that they would have observed this but just highlighted how much time it would take and how complex the process seemed to be. As prior studies as well have found the medicine guidance to be one of the most important services customers expect from the pharmacies, the usefulness of the online pharmacies regarding this could be emphasized much more. Especially the online pharmacies with online chat should market the possibility to instantly ask guidance in medical issues at home, since the respondents clearly did not recognize its usefulness.

Emphasizing the discussion with the pharmacist as a positive issue might also help to build loyalty relationship between customers and the online pharmacy. The results indicated that some customers have strong relationship toward the pharmacy they regularly visit, and some of the respondents used a phrase “my pharmacy” a lot. This might also help to fulfill other motivation related to shopping, especially related to interaction. In addition, prior usability studies have found interactivity to enhance usability of web sites, which supports the notion.

Price value has influence on the post-usage perceptions of usefulness. In this study the effect of price value is precisely on the post-usage stage, as the respondents gain information on it during the usage of the system, and they could not estimate the costs related to the behavior beforehand. Price value in this context is related to shipping costs that the customer needs to pay in addition to price he/she would pay if visiting brick-and-mortar pharmacy. IS adoption studies suggest that customers estimate the price value by comparing the additional costs and the gained value when using the system. In this context, the perceived usefulness of buying prescription medicine online should be high enough to cover the additional monetary cost. As

mentioned earlier, the findings indicate that the perceived usefulness is not high in this case, and thus price value can be inhibitory factor in the adoption process. The respondents actually expressed this quite strongly arguing that shipping costs were high in comparison to the prices of medicine, especially when the customer would buy only one product.

However, price value is a factor only related to the shipping costs. As two of the respondents noted, it would be an option to purchase the prescription medicine online and then pick up them from the pharmacy. In this case, the monetary cost would be identical to brick-and-mortar retail. Nevertheless, the respondents were hesitant, whether this would enable the key usefulness expected, i.e. save time, since they did not know if they would get the purchased and paid medicine quickly from the pharmacy without queuing. Now again, if the result demonstrability related to this would be better, customers might find this option as a great way to utilize online pharmacies. Some of the respondents noted that they often need prescription medicines in the case of illness, and it would be useful if they would not need to go to the pharmacy when feeling sick. Thus, one possibility might lie also in emphasizing that the customer can buy prescription medicine online at home and send someone else to collect the package.

Perceived ease of use is theorized to affect perceived usefulness, and the results of this study support this as well. The customers expect that using an online pharmacy for purchasing prescription medicine is similar to using other online stores. All respondents expected online pharmacies to be as easy and quick to use as the online stores they had used before. Since the regulations set demands on the online pharmacies, the buying process differs from the other online stores and is more complicated. This caused dissonance between the respondents' expectations and perceptions, and thus they were dissatisfied. Perceived ease of use and usability are crucial factors also because the findings demonstrate that customers do not have patience for errors and complexity, since they are accustomed to use online stores that function smoothly, and moreover, since they do not perceive the benefits of using online pharmacies to be significant.

As mentioned, the buying process of the prescription medicine is a significant factor of perceived usefulness and usability. Therefore all the aspects of them cannot be completely influenced with the online store design in this context, as they would in the case of regular online stores. One factor of usability and system quality that cannot be fully controlled is

timeliness, since purchasing prescription medicine requires contacting the pharmacist and therefore the buying process is not dependent only on the information system and user interface. Therefore it is important to make sure that the customer feels that contacting the pharmacist will happen quickly, i.e. the response from the system does not take a long time. The results imply that online chat was considered to be quickest way to interact with a pharmacist.

However, the results indicate that the buying process is not an issue that cannot be overcome, since it is not the only factor affecting the respondents' perceptions of complexity. The results implied that the instructions and guidance provided by the service, could affect the perceptions regarding the buying process. If the instructions were considered to be easy to understand, the buying process was perceived less complicated. Usability studies suggest that learnability is one of the key factors determining usability, since it is related to individuals first impressions with a website (Palmer 2002). Especially in the case like this, where the buying process differentiates from the expected one, learnability is in a key role. If the customers do not know how to begin to use the service, they are not likely to continue further, and if they face difficulties on the way, the usage can be interrupted. This is supported by the notion that the respondents were not willing to tolerate complexity and errors at all, and they rather abandoned the service than tried to manage with it if it appeared difficult.

It can be concluded that good instructions of how to use the service and guidance during the buying process would decrease the perceptions of complexity associated with the buying process. In fact, some of the respondents noted that the service itself was not difficult to use but the buying process appeared to be complicated. Wixom & Todd (2005) have suggested that information quality affects perceived usefulness and system quality perceived ease of use. These findings do not support that, as information quality had a significant role in perceived ease of use as well.

When considering the instructions of the online service, the focus is also on the information format, which is an information quality factor. The respondents' reactions and confusion with the system imply that the information was not presented well enough. The respondents had trouble finding information needed and one of them noted that it was really difficult to find a piece of information for long instructions. Overall, information quality appeared to be a significant factor in this study. It might also be a key factor in the relation between usability

and trust. The findings imply that outdated and inaccurate information in online pharmacies were the main issues to potentially decrease the respondents' trust toward e-vendor. Since online pharmacies are closely connected to brick-and-mortar pharmacies, both in practice and in customers' perceptions, reduction of trust can be targeted to brick-and-mortar pharmacies as well. The reputation of the pharmacies among the customers is excellent and it should not be compromised with poor information quality online.

Accessibility with both the service itself and information provided was not considered to be good. However, there was significant progress between the study settings, as on the second trials, more online pharmacies providing prescription medicine were found. Still the situation is not excellent because foreign pharmacies were among the first search results. The integration of the system and information completeness are usability factors that cannot be fully affected, since the online pharmacies cannot be connected to the Prescription Centre, where the actual electronic prescriptions are placed. Therefore the respondents' expectation of being able to see their prescriptions from online pharmacy cannot be responded. However, providing an easy access to the Prescription Centre could influence customers' perceptions regarding the integration and the range of information they are getting.

6.1 Managerial Contributions

The study suggests that the customers do not consider the online service for prescription medicine to be useful. The results imply that there might be need of enhancing the result demonstrability and make it easier for the customer to recognize the benefits of using the system, which also can be made with better instructions. The benefits of purchasing prescription medicine online could be emphasized in general as well in the online pharmacies. For example the possibility to purchase prescription medicine online and to send someone else to collect the package from the pharmacy could be an option that customers would prefer in the case of illness but they might not would consider, since they do not know whether it is possible.

The perceived usefulness is closely related to perceived ease of use of the service, and thus online pharmacies have to be ease and quick to use. Usability and especially information quality are crucial factors because they can reduce customers' trust toward the e-vendor. In

this case the e-vendor is also a brick-and-mortar pharmacy, thus there is a risk of damaging trust toward it as well. Outdated and inaccurate information are not acceptable, since they especially appear to be connected with trust.

The results suggest that the information provided in the online pharmacy regarding the prescription medicine and their purchase is in a key role. Since the possibilities to influence on the buying process are limited, the purchasing can be made easier by offering clear instructions that are easy to comprehend, and also guidance through the buying process. The findings also suggest that the version of the buying process, where the customer can choose and add the medicine to shopping cart would be better than the application where pharmacist does this. One reason is that it resembles more the regular online stores that customers are accustomed to use. In addition, then the contacting pharmacist would not occur in the beginning of the buying process but the process might feel to go further before it. This might help to get the customer in to the buying process and system, and decrease the probability that the process is interrupted. In order to prevent customers' concerns related to the selection of medicine, it could be stated that it is not confirmed before the pharmacist verifies that medicines and package sizes are correct.

The respondents considered the buying process to be complicated and were afraid that it would be time-consuming. Therefore it is important to make sure that customers can connect a pharmacist quickly, since the buying process might otherwise be interrupted. However, it is not enough to ensure this but also convince the customer to believe beforehand that it will not take a lot of time. Thus, providing information for example about waiting time on the phone is central.

The integration of online pharmacies with the Prescription Centre cannot be changed. Customer's perception of the information integration however can be influenced. If the online pharmacy provides easy access to the Prescription Centre, i.e. clear and easy to notice link, the lack of actual integration can be overcome. Another possibility to integrate information is to provide at least easy access to service comparing medicine prices, since it does already exist. These two services would also better fulfill the customers' expectation to be able to search and check information regarding medication.

According to the results of this study, the accessibility of online pharmacies needs to be enhanced, since the respondents had trouble finding the services providing prescription medicine. This issue might be improved with using of search engine optimization. Online pharmacies providing prescription medicine were confused with other online pharmacies, as well as with websites of brick-and-mortar pharmacies due to the mention of prescription medicine on them. Therefore, online pharmacies need to separate themselves from other websites in the search results. Another option is of course to gain new customers from other sources than just from the search engines.

6.2 Limitations

The study is conducted with qualitative approach, and since there were only four respondents, the results cannot be generalized as such. However, this was not the purpose of the study, as the aim was to find different constructs affecting the adoption but not to examine their relations or frequencies. The context of the study is Finnish online pharmacies, and since the results are connected to local regulations, they cannot be applied to other geographical areas.

All the respondents were living in urban areas, and had brick-and-mortar pharmacies near them, and this might have influence on the results. People living in rural areas might have different perceptions regarding online pharmacies. In addition, in the first set of interviews, there were severe problems with the online pharmacies. This is why it is not possible to draw any conclusions regarding the difference between perceptions of respondents from different age groups. The perceptions of older respondents might have been different if they had a possibility to try well-functioning online pharmacies first, but it was not possible in this study.

As mentioned earlier, the results concerning social influence may be limited. First of all, questionnaire would be more neutral as a data collection method, in comparison to interview, where the presence of the interviewer may affect what the respondents want to express. In a questionnaire it might be easier to reveal personal issues regarding social influence. Secondly, both interviews and questionnaires are based on the respondents' answers, which do not necessarily reflect their actual behavior and factors influencing it.

6.3 Future Study

Limitations provided above enlighten possibilities for future study. It would be useful to conduct similar research with more various respondents, especially residents of rural areas, since the distance to the pharmacy was brought up by the respondents numerous times. Prior study suggests that people living on urban areas would have more positive attitude toward online pharmacies than the ones living on rural areas (Heinonen 2013). Same study suggests as well that younger customers are more willing to use online pharmacies than older ones. Research concerning different groups of people would provide online pharmacies more information about possible customer segments.

The effect of experience could not been considered properly in this study. However, previous studies have indicated that both the user's previous experience with computer and the experience gained with the system can affect the adoption. This should be studied further in the specialty contexts as well. The findings imply that price value have a significant role in this context. Even though its effect has been studied before, the results indicate that its role may have been underestimated. In a context of low perceived usefulness, price value may actually be a control factor preventing the usage. The significance of price value should be examined more in detail in future studies.

Even though there have been efforts to combine adoption research with usability study, this stream of study is still inadequate. The results of this study indicate that usability factors are interrelated with adoption determinants, which confirms that neither of these should be overlooked. Some studies have pursued to include usability factors to adoption determinants, but this study suggests that it might be more beneficial for the future study.

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APPENDIX: Interview Items

Introduction

- Concerns only buying prescription medicine from Finnish online pharmacy
- No previous knowledge or experience on the subject needed
- First interview part, then the trial: you do not need to purchase anything during the trial

Background Information

- Age?
- How often do you visit pharmacy?
- How often do you buy prescription medicine?
- How much do you use computer? For what?
- What kind of internet services do you use?

Perceived Usefulness

- How the service could be useful to you?
- Is it fast?
- Is it easy? → Why/Why not?
- Overall, how useful it would be in your daily life?
- Is there something that is difficult with visiting brick-and-mortar pharmacies?

Perceived Ease-of-Use

- What do you think, how easy or difficult it would be to you learn how to use online stores to purchase prescription medicine?
- What do you think, how easy or difficult it would be to become a skillful user of online store?
- Overall, how easy or difficult you believe the use of online store to purchase prescription medicine would be to you?

Computer Self-Efficacy & Computer Anxiety

- Is anything concerning you about using online stores?
- Do you need help for using online stores?
- Do you need help for using a computer?
- If something goes wrong, how would you react? What kind of feelings would that bring to your mind?
- Does it scare you that something might go wrong?

Social Influence

- If you think about people that are important to you, how they would feel if you used online stores to purchase prescription medicine? What would they think about this?
- Would it bring appreciation towards you from people that you know, if you used online stores? → Why/Why not?

Trust

- How reliable you consider online pharmacy stores to be? → Why?
- Do you think you would get genuine and right medicines?
- How safe and fast do you think shipping of the medicines would be?

Behavioral Intention

- What do you think about the idea of purchasing prescription medicines through online store? Do you think it would be a good or bad idea?
- How comfortable or uncomfortable is the thought that you are about to try this service?
- Are you going to use online stores to purchase medicine?
- How often?

AFTER USAGE

Confirmation / Disconfirmation

- Did it fulfill your expectations?
- Was it different that you expected?
 - Benefits, speed
 - Ease of use
 - Help, concerns
 - Reliability

Behavioral Intention

- Are you planning to use in future? → Why/Why not?
- How often?
- After usage, how do you feel now about purchasing prescription medicine now?