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CONSUMER PERCEPTIONS ON A CONTENT-BASED DIGITAL SERVICE

The usage and service quality of Masennusinfo.fi

Master´s Thesis
in International Business

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1 INTRODUCTION

Nowadays patients take much more responsibility of the health of their own. The rise of Internet and digital services have enabled people to find out, educate, and empower themselves with massive amount of information (Gummerus, Liljander & von Koskull 2013). Before seeing a physician, patients have made a diagnosis by themselves based on the information they have found online (Fox & Duggan 2013). People also like to share their knowledge and experiences in discussion forums or support groups which are handled online (de Valck, van Bruggen & Wierenga 2009). Research also shows that if subjective perception of control occurs, better condition of health follows. Patients are more committed to their treatment. (Wathieu, Brenner, Carmon, Chattopadhyay, Wertenbroch, Drolet, Gourville, Muthukrishnan, Novemsky, Rather & Wu 2002.)

Customer empowerment is an outcome of the usage of digital health services (Gummerus et al. 2013). It exerts the feeling of control and satisfaction occurs. In order to result satisfaction, quality of the service should be secured. People tend to use the services that serve them the best.

1.1 Motivation for the study

Digitalization has led also pharmaceutical companies to think about their service channels. Traditionally, pharmaceutical companies' core business has been developing and selling pills, and it has been successful. They have been lacking behind in the development of digitalization. Very strict legislation limits the extent to which they can offer digital services to consumers since marketing pharmaceuticals to normal consumers is mostly forbidden. However, pharmaceutical companies can provide health awareness campaigns and websites. These websites are typical content-based websites which can not only provide information but also give support and relief to its users (Wangberg, Andreassen, Prokosch, Santana, Sorensen & Chronaki 2008).

By their nature, digital services can be offered at any part of the world simultaneously. They offer operational efficiency and cost advantages when the same service can be offered to more customers. Providing health related services is somewhat different. They are sensitive in nature and are usually offered in people's mother tongue. International healthcare organizations typically offer digital services locally but aim to standardize them as much as possible. However, small marginal markets, where the sales and customer potential is also small, are demanding: they cannot be maintained centrally and efficiently from the headquarters but the local organization lack the resources of administration and further development.

The same implies with the present study. The service that was studied, Masennusinfo.fi, is a content-based website which provides information on depression in Finnish. The provider of the service, Lundbeck, has similar digital services, for example, in Sweden. If similar studies were conducted in Sweden, the results could be compared to each other. Since similar study was not conducted before, there was also willingness to find out facts about the necessity of the service; whether it is beneficial and how it could be improved.

60−80 % of people use Internet daily to search for health info (Fox 2011; Tilastokeskus, Official Statistics of Finland, Väestön tieto- ja viestintätekniikan käyttö 2013). It is an opportunity that not a single company would want to miss. Also pharmaceutical companies have noticed the moment. For example, Joseph Jimenez, the CEO of Novartis, said that Novartis shifts their "*business away from a transactional model that was focused on physically selling the drugs to delivering an outcome-based approach to add value beyond just the pill*." He believes that in the future the pharmaceutical companies are going to be paid on patient outcomes as opposed to selling the pill. (Falconi 2013.)

Digital services are studied quite extensively. Both the academics and companies have a great interest on the consumers' online behaviour. However, the previous research on digital services has concentrated highly on consumers' perceptions on e-retailing services (e.g. Parasuraman, Zeithaml & Malhotra 2005) and very little attention has been paid to content-based services where the aim is not the exchange of a tangible product but more to offer content in an electronic form that is accessed (or delivered) via electronic interface such as the website or a mobile application (Gummerus 2013, 2−3). Service quality is also a long known concept but it has been studied mostly in terms of usability of the service such website design (Zeithaml, Parasuraman & Malhotra 2000; 2002) site availability and functionality (Parasuraman et al. 2005), or responsiveness (Wolfinbarger and Gilly 2003). The perceptions on quality of the content or the outcome in digital services have awakened interest only quite recently (Gummerus 2010). On one hand, the research focus should shift from producing a perfect offering to studying how consumers experience the offering, and moreover, what a company can do to improve that experience. On the other hand, the healthcare companies should focus on understanding consumers' experiences and everyday life in order to provide quality service fitting the needs of the users. (Gummerus 2011, 2−3.)

Digital services in pharmaceutical industry have also raised the interest of scientific community. Pharmaceutical industry has mainly been studied in terms of cross-functional innovation (e.g. Becker & Lillemark 2006), detailing (e.g. Gönül & Carter 2012) and branding (e.g. Schuiling & Moss). Digital services of pharmaceutical companies would need more attention in the research due to their uniqueness in terms of legislation.

1.2 The purpose of the study

To accomplish a new perspective on consumers' behaviour in digital services in pharmaceutical industry, the present study strives to increase understanding on the user experiences that are present in digital services offered by pharmaceutical companies. The perspective is formed by reviewing not only the discussion on the usage and perceived quality of digital services but also the characteristics of marketing pharmaceuticals. The purpose of this study is to describe consumers' views of a content-based digital service Masennusinfo.fi. The study aims to find out how consumers perceive the quality of a digital service maintained by a pharmaceutical company and for what purposes do they use the service. This purpose can be broken down into three sub-questions:

- For what purposes consumers use content-based digital services?
- How do the consumers perceive the quality of these services?
- How does the usage and perceived service quality differ across different user groups?

The first sub-question concentrates on the usage of the service. It aims to find out who uses digital services and for which particular purposes consumers use content-based digital services. The second sub-question looks into the concept of service quality in digital environment. The goal is to find out what consumers think of such a digital service in general and whether the service at issue is found of a high quality. The third question concentrates on the differences that might arise from the perceptions of different users. All the sub-questions are addressed both in the theoretical and research parts of this thesis. Theoretical part gives an overview and framework on the subject, and the research part tests the framework in a content-based digital service in pharmaceutical industry.

It should be noted that digital services can also be called as online services, electronic services, e-services or self-service technologies which all roughly refer to the same kind of services where there is a lack of physical contact with the service provider and the service is delivered via some kind of a technology. In the present study the term digital services is mainly used. Expression of e-commerce is also often applied in the literature of digital services. As the name itself suggests, e-commerce relates to the digital services that include transactions, exchange of money. It is left out of the scope of this thesis. This thesis focuses on content-based digital services which provide content, e.g. news and articles, for the use of consumers. These differences are explained more in detail in chapter two.

Satisfaction is also often covered when studying the consumer perceptions of services. As will be described later (see chapter 2.4.), service quality is a priori to

satisfaction. Satisfied customers not only generate recommendations, complaints and word-of-mouth (WoM), but also become loyal and provoke profit to companies in the long run. However, in order to become loyal, customers have to experience good quality service. In the case of a pharmaceutical company, where digital services are only little studied before, the primary focus should be evaluating the quality of the offered service in the first place. Studying both satisfaction and service quality in the same thesis would be too extensive.

Another important term used throughout the study is service usage. When discussing about the usage of digital services, the terms value and benefit are often used as well. Even though these terms could generate a theoretical discussion on their own, they are used only in terms of finding out the purposes of the service usage.

Value and service quality are also often used across and in parallel. However, service quality is an antecedent of value (see chapter 2.4.). Traditionally digital services are evaluated in terms of their quality. The result of the perceived performance can be value for the customer. Yet, the discussion on value and its creation is too broad that it could be the single theme for a thesis. Therefore, in this thesis, the concept of value is not covered.

Even though there are many content-based consumer-to-consumer (C2C) digital services, this thesis aims to take a look at the business-to-consumers (B2C) digital services. Business-to-business (B2B) services are not taken into account either. Digital services of a kind could also include interactive or peer services, but the case example of this thesis is a website that excludes any interactive or peer service features.

The study is organized as follows. Chapter two defines the key concepts of digital services, their usage purposes, and service quality in digital environments. Chapter three explains the characteristics of pharmaceutical industry and how it differs as a business area. The chapter also discusses the usage of digital health services and the changed role of a patient. This part of the thesis also illustrates the special characteristics that influence the digital services provided by the pharmaceutical companies. In the end of the chapter, the theoretical framework for the empirical part of the study is presented. In chapter four the design of the research is explained. All methodological choices are discussed in detail. Chapter five presents the results of the data analysis and chapter six discusses and draws conclusive findings, managerial suggestions and suggestions for further study. Finally, summary completes the whole thesis.

2 USAGE AND QUALITY OF DIGITAL SERVICES

As Tshin et al. (2014, 7) stated "*the Internet has changed the manner of doing business*". The traditional business and marketing methods are not necessarily valid anymore. Many lines of business have reacted to this change positively, e.g. car industry. Today, cars are no longer simple machines used to drive from one place to another but are self-sufficient integrations of multiple technologies, able to analyse, instruct and park. Additional services, such as remote maintenance or navigation services, are expected to flourish (Räisänen 2015). In digital environments consumers assume targeted services, information and content being provided and suitable to their demand when needed. As Berry, Seiders & Grewal (2002, 1) argue *all businesses are service businesses to some degree*.

The following chapter describes closely the concepts that relate to the service quality and usage of digital services. The first part of the chapter concentrates to the characteristics of digital services and their usage. By the end of the chapter, a reader will have accomplished an understanding of the long studied concept of service quality in digital environment.

2.1 Definitions of digital services

Nowadays, digital services have become popular because they have become part of everyday lives (Gummerus 2011, 33) and created more value to customers (Rohn & Sultan 2004). Broadly, digital services can be defined as all digital content and services that are accessible through online channels, or any other digital channels e.g. CDs or DVDs. This kind of definition encompasses services from audio-visual leisure activities such as gaming and active contribution or personalization services to software databases, communication and e-learning services. (Europe Economics Report 2011.) From a business point-of-view, *digital services*, also referred as electronic or e-services, can be seen as services delivered through any electronic network, mainly over websites or mobile applications, which are based on interaction between an organization and customer. The aim is to accomplish value to external customers. (Gummerus 2011, 2−3; 33−34.) Digital services may also refer to tangible products which include an electronic service, such as a pulse meter or a sleep monitor (Gummerus 2011, 2−3; 33−34.).

Digital services are often seen as part of e-commerce. Traditional e-service literature has studied customer purchase behaviour and especially earlier, in the turn of 2000s, definition of "e-business" resulted answers mainly on sales over the Internet (Parasuraman, Zeithaml & Malhotra 2005, 213; 217; Zeithaml, Parasuraman & Malhotra 2000; Rohm & Sultan 2004, 32; 34−35.) However, many digital services do

not have any shopping features but are rather information-based. Basically, any website on the Internet that allows consumers to access the site can be seen as a digital service. Nowadays, almost every business has a website of their own in which they offer at least a simple, information-based digital service. There are also portals, e.g. e-banking portals, which are networked by nature and combine information and services from several partners, across domains. Their sole purpose is neither information sharing nor transaction but rather hybrid websites with integration principle. Consumers can gain information and advice from a single source instead of several different websites. (Bauer, Hammerschmdt & Falk 2005, 154–155.)

Furthermore there are content-based digital services that emphasize on informational, promotional and supporting purposes of a (digital) service. These are usually regular websites that focus on particular issue or theme with pure content-based offerings. They do not usually include an exchange of tangible products and the interaction on the service occurs with the content of the website with only little, if any, direct human contact. (Gummerus 2011, 2–4; Gummerus, Liljander, Pura & van Riel 2004, 175.)

Digital services differ from traditional services by definition. Traditional, physical services are defined as non-storable and non-transportable, non-repeatable, perishable, non-standardized and labour-intensive. Services are characterised as process consumption; they are produced and consumed simultaneously, and at least to some extent consumers also contribute to the service process. (Grönroos, Heinonen, Isoniemi & Lindholm. 2000.) However, digital services offer things that are lacked in traditional services. Digital services are often storable, possible to repeat, standardized and do not involve any direct interaction with personnel. In digital environment, the consumption of the service may even happen in stages, consumer using the service today and finishing reading or the purchase tomorrow. (Hofacker, Goldsmith, Bridges & Swilley 2007; Sandström et al. 2008, 113.)

Digital services may be categorized mainly in two ways: according to their relation to offline services (Hofacker et al. 2007) and according to the type of user interface from the customer's point-of-view (Fassnacht & Koese 2006). Digital services may be seen as complements to existing offline services and goods (e.g. online package tracking or technical support), supplements to existing offline services (e.g. additional cost reduction or features for online customers), or uniquely new core services (e.g. online encyclopaedia or navigations service). All of these can be identified as digital services. (Hofacker et al 2007, 15–16.) Fassnacht & Koese (2006) divide digital services to stand-alone or supporting services from customer's point of view. Stand-alone services comprise from digital services which produce the main benefit to the customer. These services may offer content (e.g. news), interactive tools (e.g. price comparison agents or BMI calculators) and/or peer services (e.g. portals or discussion board hosted by a company). Supporting services operate to facilitate the use of a

traditional service (e.g. self-check-in) or the purchase of goods (e.g. online book store). Digital services are also divided according to the type of user interface, whether it is a website or mobile application or other self-service digital services. (Gummerus 2011, 35−36; Fassnacht & Koese 2006, 23–24.) Table 1 below illustrated the categorization well.

Type of User Interface

	Website	**Mobile application**	**Other self-services**
Stand-alone services	Content offers, e.g.: News, portals Interactive services e.g.: BMI calculator, price comparison agent Peer services e.g.: virtual communities discussion forums	Content offers e.g.: News M-dictionaries Information services Interactive services e.g.: location-based services Peer services e.g.: M-chat	ATMs Electronic games Interactive television Vending machines
Supporting services	Information e.g.: timetables E-payments E-booking/ticketing	M-information M-payments M-booking/ticketing	Check-in kiosks at the airport Self-service cash desk in supermarkets Interactive information boards in shopping centers Ticketing machines

Table 1 Categorisation of digital services
(modified from Gummerus 2011, 36; Fassnacht & Koese 2006, 24)

Fassnacht & Koese (2006, 23) define digital services as *services delivered via information and communication technology where the consumer interacts solely with an appropriate user interface in order to retrieve desired benefits*. In their definition, they include all kinds of digital services. They also emphasize the interaction only with user interface which does not include customer-employee interaction. The outcome is also taken into account: the service is delivered for a customer who benefits from it somehow. Also Hofacker et al. (2007) stress the importance of both the service (production) process and the outcome when considering digital services.

In the context of this thesis, the definition follows the previous definitions by Fassnacht & Koese (2006) and Hofacker et al. (2007). Digital services are defined as *stand-alone services where consumer interacts without any human contact and aims to achieve desired benefits.* The interaction with pure user interface, e.g. website, is emphasized. Digital services may be delivered and accessed via websites or mobile applications. In the context of this thesis, informational digital services are emphasized. Often digital services only offer the content of the website or mobile application. The benefits which the consumer aims to achieve may relate to purchases or information-related benefits. Therefore, the definition takes into account both the service process and outcome.

2.2 Usage of digital services

There are over two billion Internet users in the world (International Telecommunications Union 2014). All sorts of services are available online and consumers expect to be able to run their errands via electronic services. Even though the psychological traits of humans have not changed after digitalization, and the basic rules of marketing apply also to online environments, there are some special characteristics on online behaviour. Koiso-Konttila (2005) identified three themes that differentiate digital service user from offline behaviour*: time scarcity, consumers' attention* and quest for *authenticity*. Since customers often use digital services to save time, they are not willing to wait for the service to work. Websites have to download quickly and the first impression of the landing page has to be convincing. Also, the role of competition is emphasized on the Internet. Websites need to be as compelling as possible in order to capture the attention of a time saving consumer. Authenticity is harder to achieve online since the lack of face-to-face interaction, digital copies and constructed interactions. However, communities on the Internet may increase the impression of authenticity. (Koiso-Konttila 2005.)

Novak, Hoffman and Yung (2000) introduced a model of consumers' online experiences in which they claim that the state of flow led to exploratory behaviour, such as browsing websites in many kinds and being curious about them. Exploratory behaviour was compared to task-oriented behaviour where a consumer has a task to achieve on the Internet, such as research, shopping and finding information. The study confirmed the assumption: exploratory behaviour was correlated positively with focused telepresence, attention, flow and challenge arousal whereas task-oriented behaviour correlated positively with skill. More experienced the consumer was using Internet, more likely he was using it for task-oriented activities.

The so-called TAM theories suggest that the attitudes of consumers have an effect on the technology acceptance. Technology acceptance models (TAM) have originally applied to examine the variables motivating user acceptance and usage of technology (Davis, Bagozzi & Wasshaw 1989). Usefulness, ease of use and later added enjoyment influence the use of the technology. However, in the case of online environment, Internet surfers are more irregular in their actions, and their motivations using a digital service are more diversified. (Lin et al. 2005, 684.) Specific, individual situational factors such as having a baby or a disease may change the consumer's online behaviour greatly.

Dennis, Merrilees, Jayawardhena & Wright (2009, 1126; 1129) suggested that consumer traits such as gender, education, age and income influence the consumer online behaviour. Digital consumers tend to be more educated, younger, have higher socio-economic status and are more likely to be male. There are many differences between the traits, and therefore, segmented websites according to an average user profile characteristics may result in more satisfied consumers.

Men are more familiar with extended hierarchical navigation in websites than women who perceive visual and shorter navigation panes more satisfied. Women are also shopping for fun whereas men tend to be quick shoppers. (Stenstrom et al. 2008; Hansen & Jensen 2009) Education background has an effect on consumers' online behaviour also. Better educated and wealthier consumers do not necessarily constitute their opinion about a service provider only by their satisfaction level but are engaged to alternative information search and processing whereas less educated and poorer consumers base their attitude only on satisfaction. Satisfaction is seen as an information cue. Younger consumers also do more information search than older people who rely on fewer decision criteria. Older people are more loyal to the services they have found to be good. Consumer traits have an effect on the consumers' attitude towards the service provider which in turn affects the behaviour of the consumer, e.g. the intention to purchase or revisit positively. (Dennis et al. 2009, 1129−1130.)

Consumers not only perceive the quality of the service differently but also the benefit, or value, emerging from it. Gummerus (2011) determines value outcome as a combination of person, context and object (service and its characteristics). Figure 1 below demonstrates the combination. The model summarizes well all the factors influencing the outcome perception: *person* item contains personal characteristics and values, *context* item contains contextual factors such as time and place, and *object* item contains the service characteristics. The model illustrates all the factors that need to be taken into account when studying consumers' value perceptions.

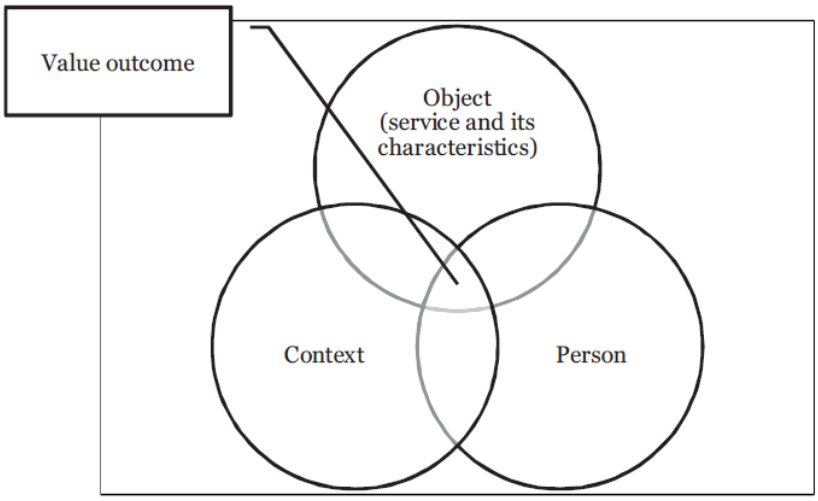

Figure 1 A simplistic value outcome determination (adopted from Gummerus 2011, 32)

Figure 1 summarises well the elements influencing the usage of digital services. Usage of digital services not only depends on contextual factors (e.g. diagnosed to have a disease) but also personal factors (e.g. sex, education background) and service-related factors (e.g. offline vs. online). Digital services are many times used to save time and are therefore assumed to work quickly. They are used for exploratory behaviour (e.g. browsing websites) or task-oriented behaviour (e.g. searching information). More experienced and educated people use digital services more often to task-oriented behaviour than exploratory behaviour. There are also differences between sexes and age groups; for example, women perceive visual and shorter navigation panes more satisfied and use digital services also for shopping for fun. Better educated and wealthier consumers are more engaged to alternative information search and processing. Younger consumers also do more information search than older people who rely on fewer decision criteria.

2.3 Characteristics of digital services

Digital services create added value to customers (Rohn & Sultan 2004). They are used mostly because of their convenience (Kim, Kim & Kandampully 2009). They help consumers save time and money. The role of both the consumer and the service provider has changed. Digitalization has enabled consumers to become more empowered. Consumes are active information seekers who expect to find targeted services. Consumers want to co-produce the services with the companies. Active

consumers are willing or even have a desire to take part in the design of the offering concerning their life experiences. This is beneficial for both the consumers and the service providers. (Fyrat & Vicdan 2008; Gummerus 2011; Vargo & Lusch 2004).

Next, the advantages and disadvantages of digital services are discussed in more detail. After that, the concept of information empowerment is presented. Information empowerment is maybe the most important outcome of both the business and the digitalization in general.

2.3.1 Digital service advantages and disadvantages

Digital services have advantages and disadvantages for both the consumer and the service provider. According to Gummerus (2011, 35) digital services have two important characteristics: *information intensity* and *interactivity*. Consumers can access more and more information for free, are able to share knowledge and experiences on services and products, and may communicate with other service-users. The interaction is based on two-way communication. There is a bigger variety of information sources available. Consumers can increase the level of their expertise on a matter or service even without interacting with the service provider. (Gummerus 2011, 33–35; van Raaij & Pruyn 1998, 361–362.)

Digital services are often *personalized*. Consumer can arrange the service and its functions according to his/her own needs. Greater choice and customization is available. Consumer can also narrow down the number of alternatives and organize the information in the most suitable order. In online environment, it is possible to gather information on the users of the website and then companies can use this information to create targeted, personalized content to consumers. Consumers are even willing to provide information about themselves. Personalization, in turn, increases the feeling of control of the service and the freedom of choice. (Bauer et al. 2005, 155; Gummerus 2011, 35.)

The *switching costs* of a service are relatively low in online environment. Digital services enable consumers to test multiple experiences and compare different offerings. If the service is not functioning well or as expected, the user may just change to the one without any technical problems. Competitive service is only one click away. (Fassnacht & Koese 2006, 19; Santos 2003, 253; van Riel, Liljander & Jurriëns 2001, 374.)

Digital services provide advantages also for the marketers. Digital services can also reduce costs by creating value-chain efficiencies and build customer and partner relationships. Digital services are studied to generate trust and strengthen brands. (Blumenthal 2009; Rohn & Sultan 2004, 32; 34–35.) As there is increasing amount of information about the markets, customers and competitors, it is easier to monitor the

business environment. Companies can provide better and new service opportunities to satisfy the needs of consumers. (Rust & Espinoza 2006; Gummerus 2011, 37.) Also smaller and unknown companies benefit from digital services since they are found more easily and can perform as a distinctive character. Digital services are often also measurable and can be targeted better to consumers based on their online behaviour. (Santos 2003, 235; Salminen 2012.) Marketers can offer more standardized service quality (Parasuraman & Grewal 2000).

Digital services *liberate people* in four ways: when (time), where (place), by whom (actor) and with whom (constellations) things are done (Normann 2001 in Gummerus 2011, 35). Digital services are always available and it provides freedom to its user to decide when and where to use it. Technological development enables consumers to consume services independently with lack of personal contact of the employees of the service. Consumers interact solely with the user interface in order to obtain desired benefits from the service (Fassnacht & Koese 2006, 23).

Digital services are used for many purposes. Many times the benefits to consumers are *functional*. Studies have shown that digital services are convenient (Meuter, Ostrom, Roundtree & Bitner 2000; Kim et al. 2009; Zeithaml et al. 2000) saving time and money (Meuter et al. 2000), being better than the offline alternative and easy to use (Meuter et al. 2000; Zeithaml et al. 2000), and providing solution to sudden, intensified needs (Meuter et al. 2000). Information is available all the time on the Internet and it is quicker and reached more efficient than, for example, calling to a customer-service. Organizations may offer cheaper prices for online customers. Sometimes, digital services are used to avoid service personnel (Meuter et al. 2000, 55). Using services independently is believed to be more effective than using services with the help of service employees.

Digital services provide some *emotional benefits* as well. Digital service might be enjoyable (Davis et al. 1989; Fassnacht & Koese 2006, 28) and a continuum for giving or receiving support (Wangberg et al. 2008, 75). Support is usually generated via peer-to-peer discussion groups or forums. Consumers have a desire to get advice from wider reference groups. People may have a concern for others as well. Peer-to-peer digital services generate new knowledge via experience, opinion, and information exchange instead of facts and written information. (Gummerus 2010, 433; de Valck et al. 2009.) However, also pure content-based services without any interactive features give support since information strengthens and gives confidence (Spreitzer 1995; 1996).

However, there are also disadvantages of digital services. Lack of personal contact may cause lack of personalization in the service. There is a lack of knowledge on the tastes or opinions of customers and there are limited ways to find out the matter. It is therefore harder to offer value propositions which could again create favourable service experiences. Understanding the customer's service experience and the dimensions

influencing it is complicated. (Sandtröm et al. 2008, 113; Gummerus 2011, 37.) The distance between the customer and service provider decreases the involvement of a service provider to the service experience.

Consumers are also unwilling to pay for the content available online. Availability of other similar services providing the same content free-of-charge causes undesirable situations to service providers. It is rather difficult to acquire customers in online environment since the consumers can compare services easily and switching costs are low. High amount of information, advertises and services decrease consumers' attention capacity. There is a lack of time and attention. Companies need to be able to differentiate from competitors which is challenging especially in the case of content-based digital services where the service offering is fairly the same among the competitors. (van Riel, Liljander & Jurriëns 2001, 360; Ritzer & Jurgenson 2010, 28; Gummerus 2011, 37; Koiso-Konttila 2005.)

For consumers, digital services poses challenges due to growing risk of personal data privacy and uncertainty (Gummerus 2011, 37). Consumers need to be sure that the service is safe to use and that their personal information is protected. In online context, trust has been especially important in financial transactions and when making a purchase. Security has a positive impact on trustworthiness of a service. Consumers also have to be convinced by the honesty of the service provider. Since anyone can provide information on the Internet, the information found online is not always reliable. There are no boundaries in time and place or languages for the information online. It is available to anyone and can be accessed around the world. The competence of a service provider must be convincing. (Gummerus et al. 2004, 175−176; 182. Parasuraman et al. 2005; Zeithaml et al. 2002; Sieving 1999.)

For consumers, digital services are also balancing the power-relationship between them and the service providers. As mentioned, consumers have an access to a lot of information for free and they are willing to share their own knowledge and experiences. Technological improvements and digitalization have enabled people around the world and across demographic groups to be aware, gain expertise and defend their own rights. This phenomenon, information empowerment, is discussed next more in detail.

2.3.2 Information empowerment

Empowerment as a concept can refer both to economic, sociological and organizational issues. From the organizational point-of-view, empowerment is a managerial practice to improve employees' performance and innovation. Empowerment consists of cognitions (meaning, competence, self-determination, impact) which reflect to individual's active orientation to work. This means that a person feels and wishes to be able to influence to

his/her work role and context. All four cognitions have an effect on empowerment evenly. The cognitions are dependent of two personal traits, self-esteem and locus of control, and two work context variables, access to information and rewards, which have a positive effect on empowerment. (Spreitzer 1995; 1996.)

From the sociological point-of-view, empowerment both relates to discrimination, equality, and consumerism. According to the World Bank (2014) "*empowerment is the process of increasing the capacity of individuals or groups to make choices and to transform those choices into desired actions and outcomes*". It is part of broad notion of freedom of choice and action. It enables individuals and societies to obtain assets and capabilities to improve their standard of living. One of the key elements to increase empowerment is access to information. Access to information generates more informed citizens, and these kind of informed consumers are better equipped to hold on to their rights, take advantage of opportunities and services, and negotiate effectively. Information and communication technologies play an important role enabling free access to information. (World Bank 2002, 11, 14–15.)

Information empowerment is usually associated to poverty reduction in developing world but it is also salient in developed countries in industries or services like banking (Jayawardhena & Foley 2000) and tourism (Hjalager 2001) where it has been referred as customer empowerment. From the business point-of-view, customer empowerment is related to the more informed consumer. Customers have greater control of their own affairs and they are able to express their needs, wishes and expectations. They have an impact on the service they receive. (Bitner, Faranda, Hubbert, Zeithaml 1997, 193; Jayawardhena & Foley 2000; 20.) Customers' role can be seen as a productive resource as they contribute to the service delivery by inputs e.g. information and experiences (Bitner et al. 1997, 197). Customer empowerment enables greater exposure to product or service information, specification of product or service features and prices, better selection of service delivery method and learning from other consumers' experiences (Wathieu et al. 2002, 299–301).

However, even though digitalization has empowered consumers with information across industries, it has affected the healthcare services the most (Vernarec 1999). There has been a change from curing illnesses to preventive care and self-care of patients (Ouchan et al. 2006). The business for e-health is booming also due to the changing behaviour of patients: they are becoming more informed, empowered and demanding. Information empowerment is discussed more in detail in chapter three.

2.4 The concept of digital service quality

Nowadays, it is not sufficient enough to simply attract as many users as possible to a digital service. Web presence and low prices are easily accomplished by competitors, and they are even more easily compared in the digital environment. Delivering high service quality is necessary in order to win customers over and over again and to achieve competitive advantage. Digital services are no longer seen as trendy Internet applications but consumers have become more and more demanding. It is very hard to create satisfaction and loyalty but it is the high service quality that makes consumers come back. (Fassnach & Koese 2006, 33.)

Service quality is little bit differently perceived and measured in online environment. For example, privacy and usability issues play greater role in a digital service than in an offline affinity. Traditionally, measures have been done to digital services that include transactions but content-based services have received far less attention. There, the trustworthiness of the content is emphasized.

2.4.1 Quality – Satisfaction – Loyalty chain

Service quality and satisfaction are both long identified and studied concepts. Service quality is a priori to satisfaction: satisfaction is an outcome of good service quality. High service quality has a positive correlation with satisfaction which in turn increases the loyalty of the customers. (Gummerus 2004; Carlson & O'Cass 2010.) Customer satisfaction is proven to generate recommendations, complaints and word-of-mouth (WoM) in short-term basis, and loyalty and then profit to companies in the long run (Oliver 1996). Loyal customers are studied to increase the possibility to repurchase (Gremler & Brown 1998; Oliver 1997), generate more revenues (Storbacka et al. 1994), create longer customer relationships (Zeithaml et al. 1993; Storbacka et al. 1994), and decrease the propensity to leave (Ganesh et al. 2000). Loyal customers return, and are studied to spend more money than the occasional or sporadic consumers (Bauer et al. 2005; Bain & Company 2011.) Loyalty is desirable since it generates more positive word-of-mouth (Gremler & Brown 1998) and because the tolerance of waiting when the service is temporarily unavailable is higher (Narayandas 1998) which is especially important for online services. Loyal customers are also more likely to buy more additional services and accept premium prices. They are less motivated to search for other competing alternatives. (Gummerus 2011, vii; Carlson & O'Cass 2010.)

Oliver (1996) defined satisfaction as *consumer's fulfilment response*. When a consumer is satisfied it relates that a product or a service itself, or its feature, *provided a pleasurable level of consumption-related fulfilment including levels of under, or*

overfulfillment (Oliver 1996, 13). Satisfaction is a summary of affective reactions to service performance. However, customer cannot be nor satisfied or dissatisfied without an antecedent experience. Previous literature proposes that there is a positive relationship between the service quality and satisfaction. The service, or its attributes, can influence the level of consumer satisfaction or dissatisfaction which, in turn, influences the consumer attitude towards the service (positively or negatively) which will then have an effect (positive or negative) to behavioural intentions such as revisitation or purchase. (Carlson & O'Cass 2010, 113–115.)

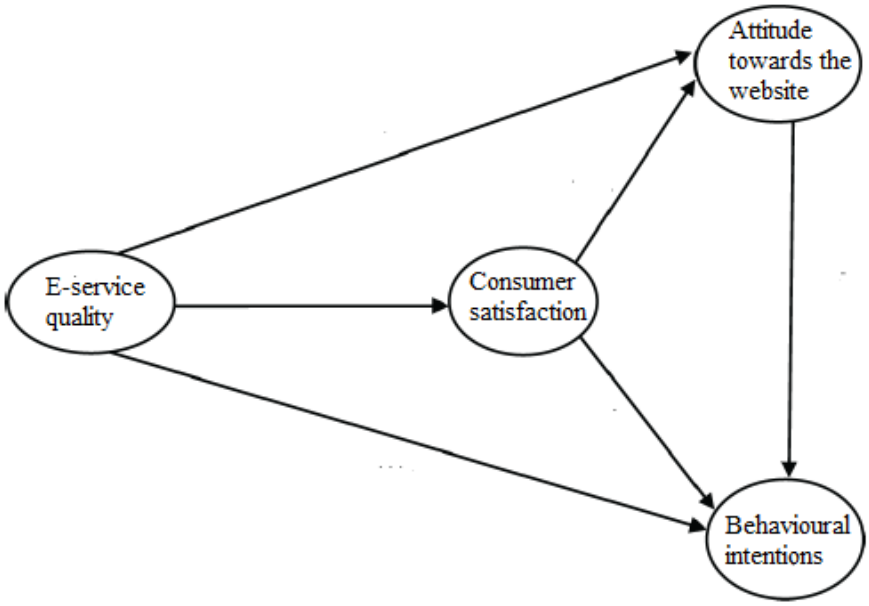

Figure 2 Relationship between service quality and consumer satisfaction (Carlson & O'Cass 2010, 113)

Service loyalty consists of four components: behaviour (repeat purchasing), affective loyalty, cognitive loyalty, and repurchase intent, of which the repurchase intent is the most researched. It is different than, for example, repeat purchasing since intent for repurchasing does not indicate whether the action will actually be taken or not. Gremler and Brown (1998) in fact suggest that affective and cognitive loyalty precede repurchase intent which in turn influences purchasing behaviour. Outcomes of service loyalty can be divided to outcomes for customers and outcomes for providers. Outcomes for customers can be social, psychological, economic, and customization outcomes. Outcomes for providers include economic, customer behaviour and human resource outcomes. (Gremler & Brown 1998.)

Trust of the customer is also vital since it influences the satisfaction the most. Trust occurs if high level of process and outcome quality is perceived. Lack of trust is found to be the most important reason for consumers not adopting online services of financial exchanges but is also important for digital services that exchange sensitive information such as health issues. (Gummerus 2004.)

Satisfaction is also rather hard to measure since it has so many dimensions and would require identifying the users of the service. The perceived service quality is traditionally measured relative to customer expectations. Perceived quality, and therefore satisfaction, depends on the reactions of consumers' experiences of services compared to their expectations. (Hofacker et al. 2007.) When using digital services, consumers continuously compare the benefits they receive to sacrifices they need to do. This perceived usefulness is employed to take into account the consumers' technology adoption decisions, satisfaction and whether to continue using the service. The outcome of a service should be, at least, as expected. (Lin, Wu and Tsai 2005.) Next, the concept of consumer expectations is discussed.

2.4.2 Consumer expectations

Consumer expectations are pre-trial beliefs about a product or service. These beliefs are compared to the information gathered in product trial and furthermore lead to inconsistency: positive or negative change of beliefs. (Olson & Dover 1979.) Expectations are probabilities of positive or negative events defined by a consumer (Oliver 1980, 460–461). Usually, customers assess their expectations with the perceived service performance (Parasuraman, Zeithaml & Berry 1988). Customer satisfaction occurs if the expectations are confirmed. Expectancy disconfirmation model illustrates this satisfaction: negative disconfirmation occurs if the product is worse than expected and positive disconfirmation occurs if the product is better than expected. Expectations are confirmed if the product or service is as it was desired. (Oliver 1980, 461.) Thus, disconfirmation theory underlines that the attitude, the expectations, which a person has before the product exposure influences the disconfirmation, and therefore satisfaction, the most and that it usually does not change after the exposure. Also the perceived performance affects the disconfirmation but not as much as the expectations. (Oliver 1980, 466.)

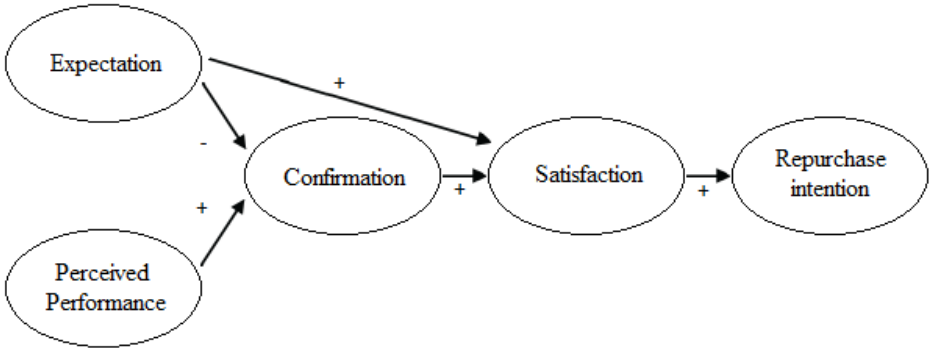

Figure 3 Expectation-confirmation theory (Lin et al. 2005, 685)

Disconfirmation theory does not specify the characteristics of expectations. According to Zeithaml, Berry and Parasuraman (1993) there are three different types of services: desired, adequate or predicted services. They represent different levels of consumers' expectations. Desired and adequate services form together expected service component, customer's view of what kind of service there "should be". Desired service level is something that the customers wish for, or what they want, whereas adequate service level is a lower level service, a level that the customer will accept. A zone of tolerance differentiates desired services and adequate services. Predicted services indicate level that customers believe is likely to occur. (Zeithaml et al. 1993.) There are many factors that have an effect on consumers' expectations of service levels: implicit service promises (e.g. price), explicit service promises (e.g. advertising), word-of-mouth and past experience (Zeithaml et al. 1993). Pawar (2014, 62) found out that the word-of-mouth (WOM) was the most important channel of expectations. External communications was the second most important factor. WOM influences customers' expectations beforehand and may attract the customers to use the service or to retain their efforts.

Consumer satisfaction is an indicator of company's performance. Satisfied customers are more likely to be loyal towards high quality service that has met, or even exceeded their customers' expectations. Oliver, Rust & Varki (1997) presented a concept of customer delight which refers to a higher level satisfaction. The difference is that customer experiences something positively unexpected or unknown before the perception. It has a great emotional attachment, for example, joy, pleasure or happiness. Customer delight is expected to result exceptional behaviour such as greater loyalty and loyalty driven profit. However, customer delight should be posed as a separate goal from satisfaction since satisfaction occurs both in parrell and apart from customer delight. Customer delight occurs only when positive emotions arouse whereas satisfaction may rise even in a case of a disconfirmation. (Oliver et al. 1997.)

As described, expectations is an antecedent of perceived performance of the service; whether it fulfils the expectations and results a perception of good service quality, or whether it does not fulfil the expectations and results worse perceptions. Next the concept of digital service quality is discussed more in detail.

2.4.3 Digital service quality

In this digitalized and service-oriented world customers define what good service is (Grönroos & Ravald 2011). Traditionally, customers evaluate service in terms of quality. However, service quality is rather hard to measure due to its three unique features: intangibility, heterogeneity and inseparability of production and consumption (Parasuraman et al. 1988).

Traditional service quality literature has identified many factors influencing service quality. The measures have been fairly devious since they are usually used in services that include retailing. Parasuraman et al. (1988) pointed out in their SERVQUAL model five dimensions influencing service quality: tangibles, reliability, responsiveness, assurance and empathy, from which reliability was the most critical. Zeithaml (1988) argued that both intrinsic and extrinsic attributes influence the consumers' perceived quality. Intrinsic attributes are physical compositions of a product such as flavour, colour, texture and degree of sweetness. Extrinsic attributes again are product-related cues but not part of the product itself, such as price, brand name and level of advertisement. Intrinsic cues are more dominant than extrinsic cues since they have higher predictive value for the consumer. Yet, consumers depend on extrinsic attributes more when there is not adequate information about intrinsic attributes available, as in the case of services. (Zeithaml 1988, 6–9.)

Service quality, in general, is defined as a comparison between consumer expectations and service performance (Lewis & Boom 1983). There are hardly any compatible definitions of digital service quality available. Zeithaml et al. (2000, 11) defined quality of digital services first: *the extent to which a website facilitates efficient and effective shopping, purchasing and delivery*. However, this definition refers to the quality of digital retail services and it is not applicable for content-based digital services. The definition of Fassnacht & Koese (2006, 25) is more suitable for all kinds of digital services, including content-based digital services: *the degree to which an electronic service is able to effectively and efficiently fulfil relevant customer needs.* As defined, both components of services are taken into account in the definition of service quality as well: the service delivery process (efficiency) and the outcome of the service (effectiveness).

Quality of digital services differs from traditional service quality in two ways: Firstly, when using a digital service, customers solely interact with an interface without any human contact. Therefore, customers influence the outcome of service delivery greatly. In traditional services, the service encounter personnel's performance plays the greatest role in the outcome of the service. (Fassnacht & Koese 2006, 25; Meuter et al. 2000, 51.) Secondly, since the digital services are delivered via online, technical channels, the service environment is completely different. It is mainly developed by specific design features and usability of the graphic user interface, which is entirely different environment than in traditional services. (Fassnacht & Koese 2006, 25.)

Service quality is dependent on the context of the service. Therefore, it is fitting that the measures of digital service quality differ from the traditional ones as well. Usually, the models measuring the digital service quality are lists of variables that are studied to influence. Many times, in the context of digital services, the measures concentrate on the technical features of the service, e.g. usability or speed of the service. Also the service provider's responsiveness, security of the website and need fulfilment are measured too.

Zeithaml et al. (2000) categorized the identified features into eleven dimensions that influence digital service quality. The dimensions were reliability, responsiveness, access, flexibility, ease of navigation, efficiency, assurance/trust, security/privacy, price knowledge, site aesthetics and customization/personalization. Later, Parasuraman et al. (2005) further developed the model and reduced the items in the model into four variables when measuring service quality: efficiency, fulfilment, system availability and privacy. *Efficiency* referred to the ease of navigation, ease of finding information and the structure of the website. The way the website is easy and fast to access and use. *Fulfilment* concerns the degree to which the promises made on the website are fulfilled, e.g. order delivery and item availability. *System availability* concern the correct technical functioning of the website, e.g. download time. *Privacy* applies to the safe usage of the website and protection of customer information. However, both of these models were developed to retailing sites and are therefore not applicable alone as such to pure service sites, such as content-based websites. (Parasuraman et al. 2005.)

For content-based websites the criteria is still in its infancy since there is only little reference for service content dimensions. Gummerus (2010) developed a model to this purposes. The model demonstrates how consumers evaluate e-service quality on websites. She uses the term value but admits in her doctoral dissertation that "*the article indirectly adds to the body of research investigating customer value, although it does not directly measure customers' value perceptions"* (Gummerus 2011, 4–5). Even though the subject of her study is value, she uses service quality as a good way to measure the benefit, value, of the service. Value is examined by service quality and dependent on the evaluations of three segments: the quality of service process, service

content and service configuration (Figure 5 below). The model is based on the service-dominant logic where companies and organizations are only providers of value propositions and customers either co-create or realise the real value of the service (Vargo & Lusch 2004).

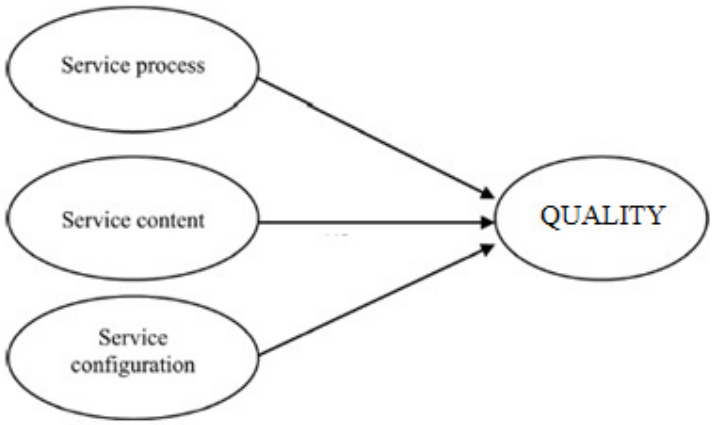

Figure 4 Customer's evaluations of digital service quality (adapted from Gummerus 2010, 427)

Service process describes the way the service is delivered. It refers to the time and effort that consumer needs to invest in order to use the service, similar to Parasuraman el al. (2005). This is especially important dimension in the case of digital services where a poor functionality of a website can have great influence on the quality perceived. It may even cause the customer to exit the service and never come again. (Gummerus 2010, 427.) Service process dimensions may refer to privacy (Parasuraman et al 2005), website design (Zeithaml et al. 2000; 2002), site availability and functionality (Parasuraman et al. 2005), and responsiveness (Wolfinbarger and Gilly 2003). Generally, the better the site works, the greater is the realised value. If the required sacrifice is small, the overall enjoyment and therefore perceived service quality is high. Service process has a positive relationship with perceived quality. (Gummerus 2010, 428.)

Process factors have had greater emphasis on the earlier literacy of digital service quality. However, it is studied that *service content* and information quality have the most effect on the perceived quality, and therefore, they are the most important dimensions of online service evaluations, especially in a case of information-oriented websites. (Gummerus 2010, 428; Liu et al. 2009, 55; Mithas et al. 2006/7, 121.) In the model of Gummerus (2010) *service content* concerns dimensions such as accuracy, relevance, usefulness of the content, information being up-to-date, and empathy and

support that the content can provide. Service content has the most positive effect on perceived quality and therefore value (Gummerus 2010, 432–433).

Service configuration refers to the mixture of services that the consumer uses and which influence the perceived quality. The scope and variety of the services have an effect on the value-creation process; they may support or complete each other. Customers tend to create combinations of services to fit best their needs. (Gummerus 2010, 428–429.)

Dimensions of service quality should include the total customer experience (Khalifa 2004, 661). In her study, Gummerus (2010) also measured the overall value; the benefit that the consumer receives when using the service. Gummerus (2010, 431) divided the overall value into emotional and cognitive aspects, and the sacrifice involved. This view takes into account the whole experience. As said, good service quality is performance related, perceiving at least what was expected, and the expectations and perceived experience can emerge both from emotional or functional point-of-view. Customer does not evaluate the service performance only on the basis of the result of the interaction (service outcome) but also during the experience (service process). Therefore, perceived service quality is based on the total service experience. (Grönroos 1984; Gummerus 2011.)

3 DIGITAL SERVICES IN PHARMACEUTICAL INDUSTRY

Regulations of pharmaceutical industry set challenging circumstances for a pharmaceutical company to provide digital services. Yet, 60–80 % of people use Internet daily to search for health info (Fox 2011; Tilastokeskus, Official Statistics of Finland, Väestön tieto- ja viestintätekniikan käyttö 2013). There is a huge opportunity to be recognized by searching consumers (Chilukuri, Rosenberg & van Kuiken 2014). Consumers of healthcare want to take more responsibility on issues concerning their health (Chilukuri et al. 2014; Gummerus, Liljander & von Koskull 2013, 234).

This chapter explains special circumstances of pharmaceutical companies. Characteristics of the industry demonstrate the business environment and challenges that digitalization bring. Usage of digital services is discussed in the context of healthcare. In the end of the chapter, synthesis of earlier concepts, digital service quality and usage, is done in order to conduct the empirical research.

3.1 Regulations concerning marketing pharmaceuticals

In 2013, pharmaceutical industry weighted for over €655 billion of which 41 % came from North-America and 27.4 % from Europe. Europe's pharmaceutical trade surplus was estimated at €90 billion which is the biggest among all high-technology sectors, and it is estimated to grow even more in the future. In Europe only, pharmaceutical industry employs more than 700 000 people. (EFPIA 2014b.) Pharmaceutical and biotechnology industry has the biggest R&D intensity of all industries in Europe. (Becker & Lillemark 2006, 105–107.)

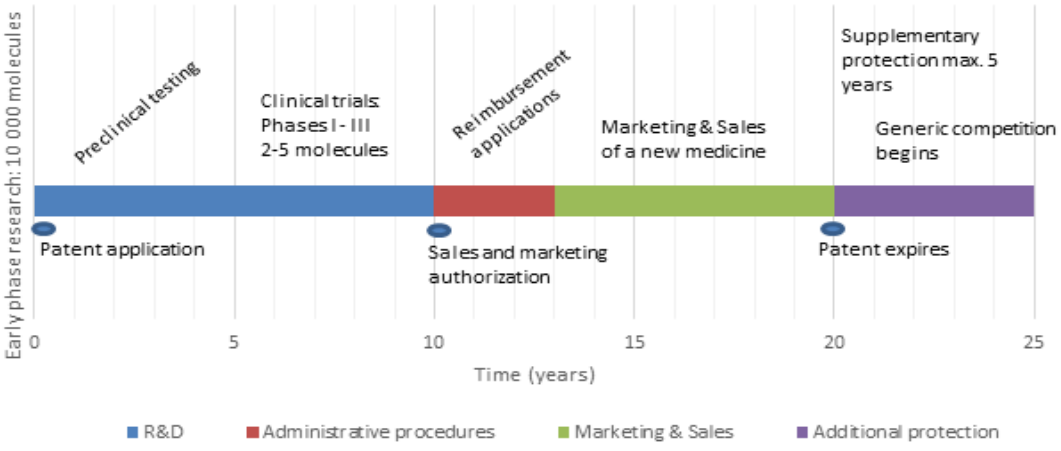

Figure 5 Lifecycle of pharmaceuticals (modified from PIF 2014a & PhRMA 2014, 46)

As can be seen from Figure 6 above, half of the time the patent is being valid goes to research phase. On average, it takes 12-13 years for a medical product to enter the market (EFPIA 2014b), and it costs $1.5 billion to develop a medicine (IFPMA report: Facts and Figures 2014: The Pharmaceutical industry and global health). It is very risky and unsure process. After years of clinical trials and millions of euros spent, there is still only 16 % of chance that the medicine will get a sales and marketing permission. National authorities analyse the true necessity of the new drug, and the permit is vital for a pharmaceutical company. (PhRMA 2014, 45–49; Tufts Center for the Study of Drug Development 2009.) Patent protection is approximately 20 years and is needed in order to secure sufficient compensation to the developer of the medicine since it has invested a lot in the risky R&D process. (Mankinen 2006, 5−6; Schuiling & Moss 2004, 366.) Marketing needs to be as effective as possible in order to gain back all the money invested in R&D. Commonly, pharmaceutical companies have great marketing budgets compared to other industries, but most of it goes to the marketing channel, delivering the product from the producer to its customer or end-user (Becker & Lillemark 2006, 105−106). However, the marketing channel is complex when marketing pharmaceuticals. The product flow does not go directly to the consumer but first either to physician who writes a prescription or a recommendation to the patient who then goes and buys it from the pharmacy or a retail outlet, or (directly) to pharmacy or a retail outlet, if the product is an over-the-counter drug (OTC). The information flow is quite similar except that in US advertising directly to the consumer (DTC) is permitted and there are other health maintenance organizations (HMO) involved that provide information, newsletters and handbooks on medication to consumers. (Gönül & Carter 2012, 40.) In Europe, marketing of prescription drugs directly to the consumer is forbidden (PIF 2014b).

Regulations of marketing pharmaceuticals and the jurisdiction vary from country to country. Legislation may be conducted nationally, e.g. in USA, or both nationally and internationally by several bodies, like in European Union. In Finland, marketing of pharmaceuticals is regulated in

- Medicines Act (395/1987) 91−93 §, 91a-c §, 92a §, 93a-b §
- Medicines Decree (693/1987) 25 §, 25a-I § and in
- Consumer Protection Act (38/1978).

Also European Union has legislated numerous directives concerning the pharmaceutical industry. The benefit organizations of pharmaceutical industry, EFPIA (European Federation of Pharmaceutical Industries and Associations), IFPMA (International Federation of Pharmaceutical Manufacturers Associations) and national organizations like PIF (Pharma Industry Finland) have set up self-regulation codes of

conducts of marketing to complete and merge the national and international legislations. The case company of this study, Lundbeck Finland, follows not only the national and international law, but also the PIF Code of Ethics and their own internal rules which are usually even stricter than the national law. Not only distribution, but also clinical trials, development, production, sales, marketing, usage and safety are extensively legislated. The full life cycle is covered. (EFPIA 2014a; PIF Code of Ethics 2014, 8.) Figure 7 below portrays the complexity.

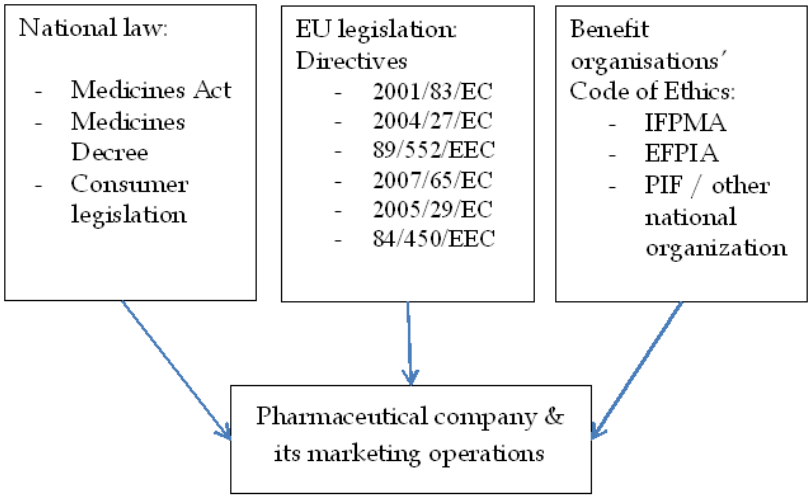

Figure 6 Regulations restricting marketing pharmaceuticals

Regulations of pharmaceutical companies place them into a special situation which is not valid in other industries. For example, the law requires a pharmaceutical company to react immediately to a complaint or other interaction of an adverse effect from a consumer, and report them ahead to the Finnish Medicines Agency (Medicines Act 30§). This and other special requirements need to be taken into account also when designing digital services.

PIF Code of Ethics is well known among pharmaceutical organizations in Finland. Similar national voluntary self-control systems are place elsewhere in the world. All members of Pharma Industry Finland are committed to follow the code. PIF Code of Ethics is based on national medicine, consumer and competition legislation, EU legislation, and the international Code of Marketing Practice published by EFPIA and IFPMA. The Finnish voluntary self-control system has been in place for 50 years and it is pioneering in the world. Breaching the Code leads to considerable sanction payments. (PIF 2014c.) The Code of Ethics does not only set rules for sales promotion. It includes instructions and guidelines for pharmaceutical marketing, medical sales representation practices, co-operation between the pharmaceutical industry and patient organisations,

and communications and information on health and disease issues targeted at consumers. Important task is to ensure the correct use of medicines. (PIF 2014c.)

There are three major rules for marketing pharmaceuticals in Europe: 1.) Marketing of prescription-only drugs is allowed only to professionals with prescription rights, or to personnel who dispense drugs, and need information about medicines in their work. These professionals are doctors, dentists, veterinarians and personnel at pharmacies. 2.) Only the marketing of self-care medicines, OTCs, is permissible to consumers. 3.) Consumers may be informed about diseases and their prevention, diagnosis, and treatment by a pharmaceutical company. This health information must focus on disease awareness, and must guide consumers towards additional information on their health condition and treatment of the disease. (PIF 2014b.)

The third major rule is interesting in respect of the present thesis. Pharma Industry Finland considers content-based websites such as Masennusinfo.fi being health awareness information targeted at consumers. The Code of Ethics gives instructions concerning health awareness information and in detail, for example, about *special stipulations concerning Internet sites*. (PIF Code of Ethics 2014, 15−17.) The purpose of health awareness is, according to PIF Code of Ethics (2014, 15), *to encourage the consumer to maintain their own and their close ones' good health, help them to recognise diseases, their symptoms and risk factors as well as guide the consumer to acquire additional information about the promotion of health and treatment of diseases*. Especially health awareness campaigns have had evitable influence on earlier disease detection and increase in public awareness of the subject (Jacobsen & Jacobsen 2010, 56). Usually, health organizations are the organizers of the awareness campaigns but today also pharmaceutical companies have been the main executors of awareness campaigns e.g. Roche did in its breast cancer campaign, *Kanssasi* (With you) (PIF Press release 13.11.2014).

All the same rules of marketing pharmaceuticals apply to health awareness information as well. PIF Code of Ethics (2014, 15) instruct that health awareness information must be truthful by nature, reliable and written with good taste so that it is comprehensible to an average consumer. It should support a positive image of a pharmaceutical industry and give a balanced picture of the disease in question. Health awareness information should not encourage consumers to unjustified use of medicines or to seek unnecessary treatments. It is also said in the Code that all therapy options should be presented impartially. Also other factors, such as changes in living habits, which may influence the treatment or prevention of the disease, should be expressed as well. If health awareness information contains references to findings from research or clinical trials, such data must have been published in a scientific article, and the source of such information should be primarily other than the pharmaceutical company itself.

Even the visual image of the health awareness information is regulated. (PIF Code of Ethics 2014, 15−16.)

Special regulations concerning health awareness information Internet websites are very strict. If there are any links used in the Internet sites, it is important to note that the principles concern also the liked pages. It is not allowed to link directly to a website that contains pharmaceuticals marketing information. Links can be added either to all parties offering pharmacotherapy options or to none of such parties' sites. Links ought not to be led to any product specific sites, but to the homepage of the company, or to foreign sites, except the international homepage of the company which cannot contain prescription-only medicine marketing. Links to the patient organisation pages are allowed. (PIF Code of Ethics 2014, 17.)

The name of the responsible company should always be indicated clearly. The responsibility of the materials and content used in health awareness information belongs always to the pharmaceutical company even if it is written with an assistance of a third party. (PIF Code of Ethics 2014, 17.) As in all marketing of pharmaceuticals targeted to consumers, consumers must be advised to turn to their own healthcare professional in questions related to their personal health (PIF Code of Ethics 2014, 9).

Operating in pharmaceutical industry is rather complex, and therefore, the traditional rules of marketing are mostly not applicable. Regulations restrict also the provision of digital services. No other company needs to take into account that if they place a discussion forum on their website, they need to administer it continuously in case of a complaint. Pharmaceutical companies cannot even mention the names of their own core-products, the medicines, in their health information websites. Otherwise they should mention all the medicines available, including the medicines of their competitors.

3.2 Digital services and the changed role of the patient

Healthcare information sites have contributed greatly to the growth of the Internet. There is a growing amount of people around the globe using Internet daily and ready to adopt new technological solutions (Gummerus et al. 2013). Technology is developing hand-in-hand with the changing healthcare industry. Electronic healthcare, or e-health, refers to the usage of interactive technologies to different health improvement and healthcare services (Eysenbach 2001). E-health services can be targeted to either healthcare professionals or patients and the general public. Consumers use e-health services to monitor their own condition and progress, learn more about their own or relative's illness or to search for more information. E-health helps consumers to track their health with wearable electronics (daily steps, calories burned, calorie intake, pulse

etc.) or to prepare for a meeting with a healthcare professional and gather information after the meeting. Consumers usually use e-health content for a specific purpose and for their own or other's benefit. (Gummerus et al. 2013, 235–236.)

The boom of digital services in healthcare is influenced by two major changes in healthcare industry. Firstly, healthcare has shifted to patient-centered care in which the practitioner-patient relationship is based on cooperation and the decisions should be done respectfully to patient's needs, values, and preferences (Institute of Medicine 2001, 6). Patients should be in the centre of the process, and decisions made in partnership (Ouschan, Sweeney & Johnson 2006). Secondly, the role of patient has changed from passive object of treatment to an active participant of healthcare management (Lober & Flowers 2011, 170; 173). More than 40 % of US citizens who diagnosed their condition through online research had the diagnoses confirmed by a physician (Fox & Duggan 2013, 6). Research shows that if subjective perception of control occurs, better condition of health follows. Patients are more committed to their treatment. (Wathieu et al. 2002, 301–302.) They have become more informed, more empowered and therefore more demanding: consumers are conscious nowadays (Chilukuri et al. 2014; Gummerus et al. 2013, 234). E-health is also reported to improve the quality of the care, enhance disease monitoring and decrease medication errors (Chaudhry, Wang, Wu, Maglione, Mojica, Roth, Morton & Shekelle 2006, 744–748). Until now, healthcare industry has strongly relied on the interpersonal contact but nowadays digital services in healthcare provide advancements that enable more efficient information flows, preventive care and even self-help of patient which again reduce costs (Ouchan et al 2006). E-health reshapes the healthcare delivery (Lober & Flowers 2011, 169).

There are pharmaceutical companies that have now invested in the digital services targeted to consumers. Usually the digital services are basic information websites fostering health awareness. Consumers can educate themselves via guides, information and preventive education on the Internet or via mobile applications. Digital services of pharmaceutical companies provide information to anyone using Internet. Healthcare professionals need to understand how the use of e-health services influences the consumers', patients' and their families' lives (Gummerus et al. 2013, 235–236.) in order to offer suitable services for the target group of their interest. These services may have extensive consequences.

3.3 Different uses of e-health

E-health is used for saving costs and making healthcare more efficient. E-health solutions, when well-established, can provide quicker care or self-help as additional

service to professional healthcare. Consumers can perform simple test at home, for instance, measuring blood sugar or monitor blood pressure, and then send the numbers to a healthcare professional. (Gummerus et al. 2013, 237.)

The users of e-health services are normal citizens. Nowadays more and more people seek for health-related information in the Internet. The online health consumers are usually patients, patients' friends or relatives, and citizens in general (Sørensen 2005). Typically, the search for health information is undertaken behalf of someone other than the patient himself, a friend or a relative of a patient, and in most occasions the information found has an impact on how the person takes care of himself or someone else. (Fox 2011.)

According to Gummerus et al. (2013) the usage of e-health services can be categorized to pure e-health, pre-appointment e-health, combined e-health and professional, and post-appointment e-health. The role of the content of e-health services is emphasized: when and for which purposes it is used. Consumers not only use e-health services in general but also before and after seeing a healthcare professional to prepare oneself or to reflect on the newly heard diagnosis.

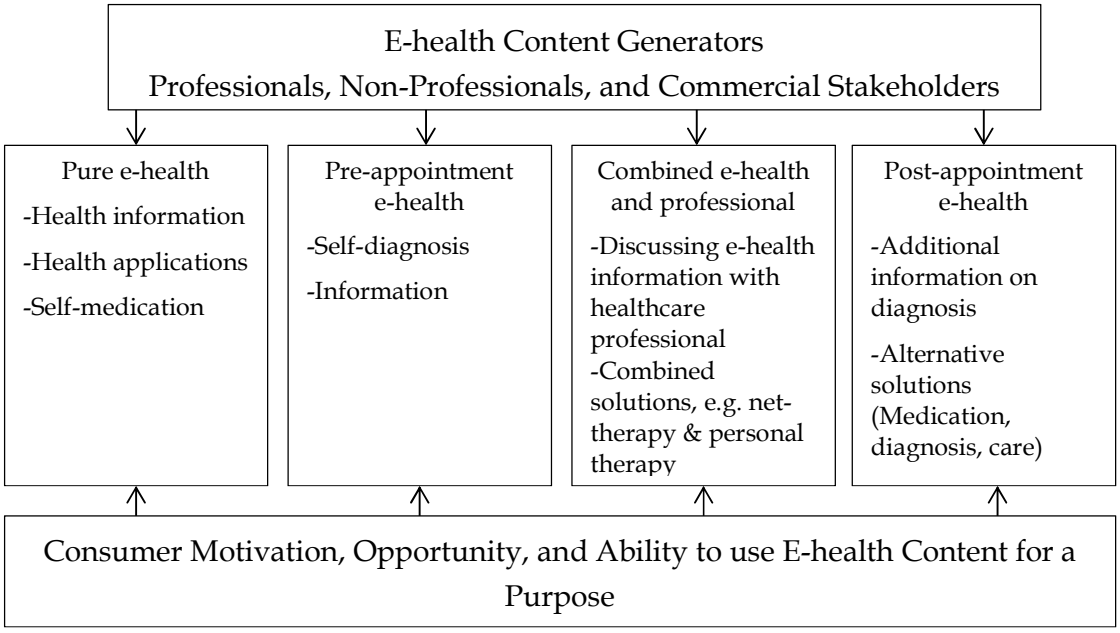

Figure 7 Categorization of consumer e-health use (Gummerus et al. 2013, 236)

The search behaviour depends on the type of information sought, reasons for and experience of searching. One of the biggest reasons to go online is to figure out a medical condition that oneself or a closed-one may have. People educate themselves with e-health services (Houston & Allison 2002). It is also very common to conduct the search before seeing a physician. (Fox & Duggan 2013.) Broadband connection has also

abled information gathering to become as a habit for many. 12 % of American households with a broadband connection search for health information on a typical day as a habit. (Fox 2008.)

The usage of the e-health services differ between consumer traits. Women are more likely to search for health information online than men which is the opposite of comparing to the general use of Internet. People between 30–49 years search for health information the most. Research also shows that consumers searching for health information are more educated, have high income level and have an access to high-speed Internet on a daily basis. People with poor self-rated health condition tend to search for health information more. Chronic disease tends to increase the Internet usage also. (Houston & Allison 2002; Lorence, Park & Fox 2006; Fox 2009; Wangberg et al. 2008; Fox & Jones 2009.)

3.4 Customer empowerment in e-health

Information empowerment has influenced healthcare greatly. Electronic health-related information enables consumers to take more responsibility and make decisions about their own health condition. Digital services provide consumers health tools to take preventive measures, such as weight control, smoking cessation, alcohol intake, or to seek for help and relief to sickness, and then act according to the information they have collected. Due to loads of information available online, consumers become more empowered. Information is available to everyone and it is found easily for free and fast without queueing to anywhere. (Sieving 1999; Gummerus et al. 2013, 233; 237–238.)

Information empowerment in healthcare impacts the relationship between the patient and healthcare professional. Van Raaij and Pruyn (1998, 813) proposed a model which claims that contribution and control varies in continuum in the relationship between provider and customer, and that in many cases customers control more over the service. This is in line with the patient-centered care approach but is still rather new position. Especially in professional services like healthcare, there exists power imbalance between the service provider and service users. In this kind of interaction, the consumer is an inexpert, dependent to the knowledge of the professional or a specialist who has all the knowledge and skills required. This kind of an arrangement creates power-dependency situation where the patient is dependent on the knowledge of the healthcare professional and who is determining what is best for the sake of the patient. (Parsons 1975, 264−266; Laing et al. 2004, 188−189.) Information empowerment improves the position of a patient in the relationship between patient and healthcare professional.

Gummerus et al. (2013, 237–239) introduced a MOA framework, a model of the role of e-health in customer empowerment. The framework indicates that e-health increases

consumers' motivations, opportunities and abilities to handle health related issues. Firstly, consumers are more *motivated* to follow their treatment and health. Consumers evaluate, use and act on the information more, and they are even more able to compare their situation with others. Motivation to collect information is bigger whether the information is collected from online or from offline service encounters. Secondly, e-health enables consumers to have an access to a large amount of information in wide range of information sources. Thereby, it increases the *opportunities* of consumers to acquire and employ information. Consumers have bigger offering available and they are not dependent on one doctor's opinion only. Thirdly, e-health enhances the consumer's *ability*, the skills and knowledge regarding health issues, since they can exchange information and opinions with peers. These aspects lead together to customer empowerment. (Gummerus et al. 2013, 233; 237–239.)

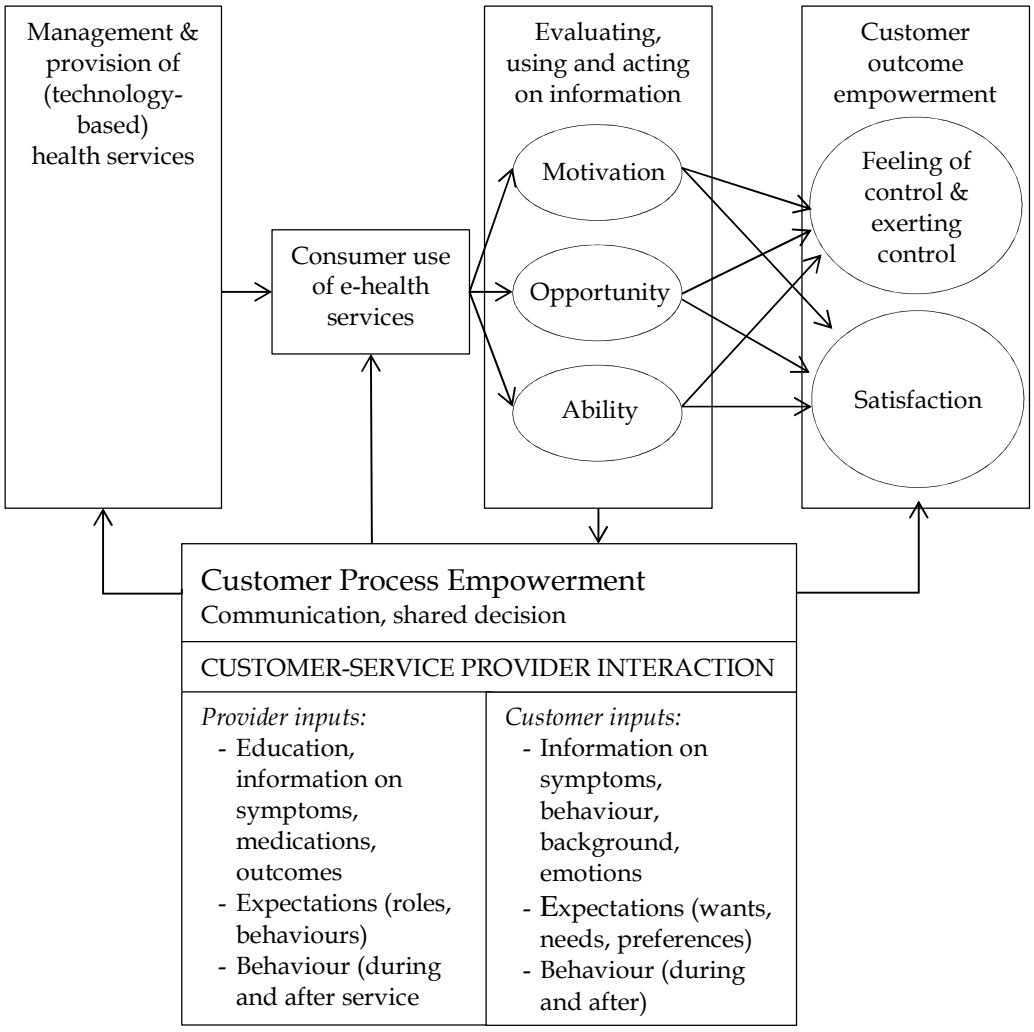

Figure 8 The influence of e-health use on customer empowerment (Gummerus et al. 2013, 238)

The model also indicates that both the customer and the service provider give input to the interaction. The service provider gives education and information on symptoms, medication and treatment, and the outcomes of health issues. Service provider has expectations concerning the roles and behaviours of both parties. Also the behaviour influences the interaction and the outcomes of the service. Customer, in turn, gives not only information on his/her symptoms, behaviour and background but also on expectations, needs and wishes. Needs are basic such as curing an illness whereas wishes are indications of the ways in which the customer wants the need to be satisfied. Expectations, in turn, are results of planned communication, word-of-mouth and service provider's image. Customers' expectations influence the perceived service quality and therefore satisfaction. (Gummerus et al. 2013, 239; Edvardsson 1997, 32.) All the inputs of both parties influence the provision and the usage of e-health services which again influence the motivation, opportunity and ability of consumers to evaluate and act on the health awareness information received.

Even though both parties influence the interaction process, consumer empowerment enables customers to influence the process and the outcomes more (Gummerus et al. 2013, 239). The care is increasingly centered and driven by the patient, the customer (Lober & Flowers 2011). Weeks & Weinstein (2014) emphasize that the only criteria for health services excellence is that the patients receive only the care that is right for them in that particular condition: the care that they want and need. Many times this is not the case. Many times patients are not informed about the treatment or a service that they receive, and if they were, they would not want to receive it. Now that e-health services provide information to patients, they are also in a better position to demand for better treatment. Challenge is that in healthcare service provider is not always able to fulfil the needs of the customer, e.g. curing an illness. Service provider's only possibility is to help the customer to understand it and accept it. (Gummerus et al. 2013, 239; Weeks & Weinstein 2014.)

In the model, Gummerus et al. (2013) suggest that customer empowerment is an outcome of the usage of e-health services. It exerts the feeling of control. Satisfaction occurs. In order to result satisfaction, quality of the service is an antecedent of satisfaction.

3.5 Synthesis

As emphasized, pharmaceutical industry is a complex area of business due to regulations. Direct interactions are challenging for a pharmaceutical company. The law and regulations require representatives of a pharmaceutical company to react to complaints and other interactions from consumers immediately and report them ahead

to the Finnish Medicines Agency. Therefore, having direct interactions with consumers might be impossible for a pharmaceutical company. They require resources to monitor constantly. Yet, pharmaceutical companies can have indirect interactions with consumers, such as providing a content-based digital service. Then, there are no collaborative, dialogical interactions. Provider of a service cannot actively influence the service experience process but rather facilitate or support it. (Grönroos & Ravald 2011; (Grönroos & Gummerus 2014).)

In order to provide high quality digital services, the user of the service needs to be identified, and the service modified according to the findings (Hofacker et al. 2007, 26). User characteristics and motivations influence both the usage of the service and perceived service quality. In traditional services, the service employee has a chance to affect the perceptions the customers receives while using the service. At the time the consumer is consuming a digital service, there are not many ways to influence the service experience, or find out about the tastes or opinions which are essential in order to deliver better service or even offer the correct one. They need to be studied beforehand. Digital services as such increase the perceived service quality. Measuring perceived service quality has been studied by various researchers but usually in a case of e-commerce. Content-based digital services are only little studied.

The model of Gummerus (2010) was chosen as a model measuring perceived service quality of content-based digital service. There, the dimensions of service quality is divided into service process (the way the service is delivered, usability), service content, service configurations (the combination of service-features), and value (overall quality). Service configurations were not necessary to study in this thesis. There was no valid measure for usage purposes available when conducting the study. Therefore, the usage purposes were measured according to the findings presented in the theoretical part previously. However, the model of value outcome of Gummerus (2011) divides the usage purposes well. Gummerus (2011) determines value outcome as a combination of person, context and object (service and its characteristics). In Figure 10 below, framework for the study is created. The hexagon presents the area in which the current study focuses on.

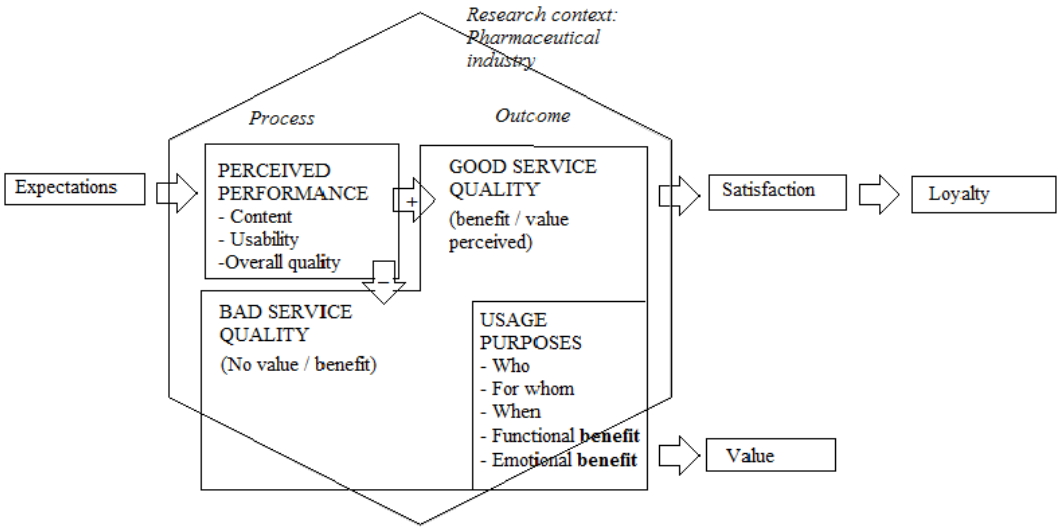

Figure 9 Framework for the study

Horizontally, the relationship between expectations, quality, satisfaction and loyalty is illustrated. In the middle, inside the hexagon, the fields of the present research are presented. Up in the left corner perceived performance, which is measured in three different areas of service quality (content, usability and overall quality), results either good or bad service quality. In this context, adequate service quality is accounted as good service quality. If good service quality occurs, the user of the service benefits from it somehow which is defined by the usage purposes of his/ her own. Usage purposes are divided according to personal factors (who and for whom, e.g. sex, education background), contextual factors (when, e.g. diagnosed to have a disease), and service-related factors (functional and emotional benefits e.g. offline vs. online). If (some of) these usage purposes are fulfilled, value for the customer occur. In terms of digital service definition, the model takes into account both the process and outcome of the service. Next, the framework is established by the empirical research.

4 RESEARCH DESIGN

Research design is a description of the plan for the collection, measurement and analysis of the data for the study in question. It specifies the details of the procedures and implementation of the research – the practical aspects. The methods and the whole process of the empirical research are explained step-by-step and discussed in detail. It is a way of convincing the reader so that the research is done in a systematic and thoughtful way. Information on the methodology is essential in order to evaluate the reliability and validity of the study. (Kvale 1996, 255–256; Malhotra & Birks 2007, 64.)

This chapter describes the empirical research process and discusses all the decisions made during the process of this study. This study falls into a category of a descriptive quantitative research, and it was conducted with a web-based survey. Principal component analysis, independent t-test and one-way ANOVA were used as the statistical methods in order to find latent, summarizing variables and to compare different variables between each other.

4.1 Research approach: quantitative research

Traditionally, empirical research is divided to quantitative and qualitative research approaches. Where qualitative methods are well suitable when the purpose of the study is to collect preliminary insights of a phenomenon or a construct, quantitative methods are best applicable when a study is to describe or test an existing theory (Hair, Bush & Ortinau 2003, 211–213). Qualitative approach aims to explain the object of the research and helps to understand it. Quantitative research is a research strategy in which events are measured. It is a way to find out dependencies and relationships of different variables. Moreover, in terms of data, quantitative approach is typically based on objective numeric data which demonstrates the size, number, or order of variables, and qualitative approach often represents the researched phenomenon based on subjective content and semiotic analysis. In qualitative research, the sample is rather small; there are only a number of carefully selected cases, whereas quantitative research typically results large samples. Therefore, the findings of a qualitative study cannot always be generalized. Quantitative methods are characterised as objective both in collecting and interpretation of the results. (Hair et al. 2003, 211–213; Heikkilä 2005, 16–22; Nummenmaa 2004, 18–19, 33.)

In addition, a study can be classified as exploratory or conclusive by design. Conclusive design can also be divided into descriptive or causal research. Studies that aim to provide insights into and understanding of a certain phenomenon can be considered as exploratory by design. Descriptive and causal studies aim to describe

specific phenomena where the needed information is clearly specified. Exploratory and conclusive studies can be both conducted with qualitative and quantitative techniques but normally exploratory research designs work with qualitative data, and descriptive and causal studies require quantitative data. (Hair et al. 2003, 211−213; Malhotra & Birks 2007, 69−72.) The research approach should depend on the research questions and the purpose of the study. They define the suitable methods and approach to use. (Heikkilä 2005, 13, 16.)

As the objectives of present study are best achieved by describing and measuring the results of the questionnaire formed on the basis of existing theoretical and empirical findings, this study is descriptive by design. As a result, quantitative methods were chosen to suit the best. Quantitative research is usually chosen when

- measurement can offer an useful description of the studied subject,
- measurements can explain relationships of studied subject,
- descriptive calculations about the measures can be made, and
- probabilities are wished to be calculated (Williams & Monge 2001, 5).

Due to the special area of business, there is not much known about the established constructs of the usage and quality of digital services in pharmaceutical industry. However, the constructs are studied well elsewhere and the present study aims to describe how the constructs occur in this particular environment. As the purpose of quantitative research is to explain, describe, explore, compare or predict phenomena and matters with numerical data, it is well suitable for exploring this existing picture of the present study (Vilkka 2007, 19).

4.2 Description of the studied content-based digital service

This study was implemented on the website Masennusinfo.fi. Masennusinfo.fi is a content-based website which contains articles and information about depression as a disease, its symptoms, care, and stories of others diagnosed depressed. It is targeted to people who suspect that they, or their close-ones, suffer from depression, and to patients already diagnosed with depression. The website is maintained by Lundbeck Finland. Lundbeck is a Danish pharmaceutical company that researches, develops, produces, markets and sells prescription drugs to brain diseases. Lundbeck has operations in 57 countries worldwide and it is the second biggest pharmaceutical company in Scandinavia. In Finland, they have a marketing and sales organization. (Bloomberg 2003; Lundbeck Global 2014.) Lundbeck has similar digital services which are provided globally (e.g. rethinkdepression.com or cnsforum.com) but they are mostly targeted to healthcare professionals. Other nation specific services they have elsewhere

also, for example, jagkanparkinson.se in Sweden, which is a website about Parkinson's disease.

Depression is one of the most common challenges in public health (Isometsä 2007, 157). There are 5 % of Finns (Käypä hoito -suositus 2014) and 20 % of British youth (Office of National Statistics 2014) who experience a period of depression every year. Many will never be diagnosed since they do not know where to search for help or they do not identify the symptoms (Hamburgh 2015; Kallionpää 2015). Women are about twice as likely to develop major depression. They also suffer from seasonal affective disorder, bipolar disorder, and chronic depression more often than men. No consistent explanation for the gender gap has been found, but genes, hormones and stress have all been identified to contribute to the development of depression. (Women and depression 2011.) Also 10–15 % of women experience postpartum depression (depression after giving birth to a newborn) (Käypähoito –suositus 2014). Depression is also more common older people get (Mirowsky & Ross 1992, 187).

Described in terms of the digital service classification presented earlier (see chapter 2.1.), the studied digital service can be classified as content-based digital service. Masennusinfo.fi only offers content which may be used in information-related purposes. The service is available for access via any mobile devices since it is a browser-based service. It is a classic example of a business-to-consumer (B2C) content-based digital service. Digital services of a kind could also include interactive or peer services, but Masennusinfo.fi is a website that excludes any interactive or peer service features.

Masennusinfo.fi has approximately 10 000 visitors each month. There was little, if anything, known about the population of the research. No other studies or surveys were conducted before, and there was no profile of an average user. Lundbeck Finland cannot have detailed information about the users of their digital services which are available to any consumer. The reaction of the service users to the questionnaire could not be predicted beforehand; if it appeared intimate or irritating. The only information that was used in advance was a Google Analytics Report of the website from previous months. According to the November report (2014) Masennusinfo.fi had had 9 847 unique users of which 77 % were new and 23 % were returning. Average duration of a visit was 2 minutes 7 seconds and 2.31 pages browsed. Bounce rate of the website was very high, 65 %. Bounce rate indicates the share of visitors that leave the website after one page without browsing further on the website. Usually, this indicates that the entrance page does not appear appealing enough to continue, it is too hard to navigate, the website does not provide the information the user seeks or the website takes too long to load. (Hartwig 2013.) Commonly, this is derived from badly implemented user interface of a website, or content, which is not specific enough but remains too general. The present study was conducted in order to shed light to the usage and perceived quality of the service.

4.3 Conducting a web-based survey

Surveys are perhaps the most generally used research method in business research (Adams, Khan, Raeside & White 2007, 111). In a survey, questions and answer options are standardized ensuring that all respondents answer the same questions in a same order and have the same answer options (Malhotra & Birks 2007, 273–274). Survey is a convenient method to study relationships between phenomena based on probabilities (Terho 2014).

There are different types of surveys; person-administered (e.g. executive interview), self-administered (e.g. mail panel survey), telephone-administered (e.g. telephone interview), or online surveys (e.g. internet survey). When choosing a survey method, the presence and the help of the interviewer need to be evaluated; whether it is possible or needed. For example, in telephone-administered survey, an interview is conducted over the telephone where the interviewer is asking questions and the respondent answering, while in self-administrative surveys, the survey is mailed to respondents and they are answering to it independently. (Hair et al. 2003, 258–263.) The present study was conducted with a web-based online survey since the population of the research is geographically diffused, and since the subject of the studied service, depression, is sensitive in nature. The identity of the service users was not known in advance, and with a web-based survey, the privacy of the respondents was ensured. Designing a survey involves activities in three areas: choosing how to collect data, constructing the survey questionnaire and making decisions related to sampling (Fowler 2009, 4).

4.3.1 Data collection

Survey is an effective research method. With surveys, it is possible to collect quantitative primary data from large number of people. Moreover, survey methods emphasize systematic gathering of the same measurable data. Asking the set of standardized, structured questions enables the researcher to find out what respondents think, feel, and do instead of observing specific situations by themselves. (Hair et al. 2003, 254–255.) Survey is usually chosen as a data collection method when the population is large, it is diffused geographically in a large area, or when sensitive, personal matters are studied. For example, health, health behaviour, self-care, eating habits, income and consumption are these kinds of sensitive and personal matters. (Vilkka 2007, 28.) Survey is also a research method which removes the influence of the researcher and therefore the quality of the responses and data is better. More reliable generalisation of the results is possible. It is a consistent form of measurement where the answers are immediately ready for analysis. (Malhotra & Birks 2007, 273–274.)

Nowadays, online surveys (e.g. e-mail or web-based surveys) have become a convenient method of collecting data. They enable even faster data acquisition, retrieval, and reporting of the results in real time. E-mail surveys are delivered and returned by e-mail, whereas web-based surveys, also called as internet surveys, are integrated into a website. (Hair et al. 2003, 267–269.) In addition, the responses are saved automatically into a database (Heikkilä 2005, 69–70).

However, there are also disadvantages in surveys. They are usually related to misleading answers, or the ability of the respondent to answer the questionnaire. The questions in a survey need to be planned carefully since the researcher cannot influence whether the respondents understand the questions or not. The questions may also be understood differently. (Hair et al. 2003, 257–258.) Moreover, the timing plays a huge role in surveys because it may cause low response rates if the timing is wrong. Surveys are many times also forgotten to answer, and therefore it is important to remind the respondents if possible. There might also occur some technical problems that block the possibility to answer to the questionnaire. (Vilkka 2007, 28.) There is also the problem of honesty; the researcher cannot be sure how honestly and carefully respondents answer the question. In web-based surveys, there is also the challenge of self-selection; it is available to anyone, and therefore the researcher cannot be sure whether the respondent falls into the target population. One disadvantage is also the access to the web: there are still a lot of households and people who do not have an access to the Internet. (Malhotra & Birks 2007, 275.)

When choosing an appropriate data collection method, there are several important factors and characteristics to be considered, such as population issues, sampling issues, question issues, content issues, bias issues, and administrative issues. For example, the completion time and the budget of the research are examined. (Trochim & Donnelly 2008, 118–120.) In this present study, especially the population and sampling issues proved the most critical factors when the survey type was assessed. Since the studied service is a digital service, a web-page, which is provided and consumed in the internet, online survey method was suitable. The service is also available to anyone using internet. As any personal details of the service users are not identified, an e-mail survey was not an option. Supposedly, the users are also geographically dispersed. Web-based survey was seen as a discreet method also due to the health related subject of the service, especially depression. In addition, taking into account the budget and schedule of the study, web-based survey was seen as the most suitable data collection method in the case of this study. The survey was conducted through questionnaire software SurveyMonkey (https://fi.surveymonkey.com/) as it had been used in Lundbeck Finland before. It is cloud based questionnaire software which provides a survey administrator to encode and publish surveys in the Internet.

4.3.2 Constructing the questionnaire

When constructing a questionnaire, a researcher should evaluate how to measure the intended constructs to measure as carefully as possible. The question types typically used in survey questionnaire are open ended questions (also called unstructured questions), multiple choice questions, and closed questions (also called as structured questions, which are normally different types of scales where the answer options are fixed. The appropriate question type is determined according to the nature of the studied construct. (Hair et al. 2003, 450; Heikkilä 2005, 47–54.) Due to regulations in the pharmaceutical industry there could not be any open questions in the questionnaire of this study, or the results of the questionnaire should have been monitored continuously. Therefore, all the questions in the questionnaire were closed ones, even though closed questions can generate somewhat vague responses or even some options might be missing (Heikkilä 2005, 51). Closed questions secured that nothing but answers related to this research were given. Advantages of closed questions are also that answering is fast and the statistical processing of the results is easy. They reduce the effort and thinking of the respondents. Especially in online conducted questionnaires it is important that the answering time is as short as possible. (Hair et al. 2003, 450; Heikkilä 2005, 51.) Disadvantages, again, are that the answering is too easy and might lead respondents to give answers without thinking. Also the option "I cannot say" is tempting. When the questions and answer options are structured, some of the information is always lost. (Heikkilä 2005, 51–52.)

It is also important to consider the wording of the questions in order to avoid misunderstandings, misleading or leading where the respondent is directed to give a certain response (Hair et al. 2003, 449–451). That is why the questionnaire should always be tested before the actual data collection, especially if it is a self-administered questionnaire (Fowler 2009, 122−125; Vilkka 2007, 78). There were eight people, friends, teachers, and representatives from Lundbeck, who tested the questionnaire and gave feedback before publishing it. The questionnaire was then modified based on the feedback about the language, order of the questions, or response options, and even unnecessary response options.

In the end, the questionnaire consisted of background questions (e.g. questions about sex, age, education background) and research questions (questions regarding the usage and quality of the website). However, due to the sensitivity of the subject concerned, no detailed information was gathered. Not only the wording but also the order of the questions was thought trough. Most of the background questions were asked in the end of the questionnaire so that answering to the questionnaire would not feel intrusive. Asking too personal information in the beginning of the questionnaire may create a feeling of intimacy.

Well established implementation of a questionnaire is also highly dependent on the technical details. Link to the survey was proposed in a pop-up window on Masennusinfo.fi. However, due to the irritation reaction that pop-ups usually may cause, fixed banner was placed to the right corner of the website first. It was fixed in a way that it remained visible to the user even though he scrolled the page down. When clicking on the banner, a pop-up window bounced to the middle of the page giving more information on the research. The questionnaire opened in a new tab in order the user to be able to take a look at the website still when answering the questionnaire. The pop-up and banner were both coded as "lightboxes" so that advertisement blocking browser add-ons would not block its visibility.

The sampling process was conducted on January 2015. Originally it was supposed to be handled on December 2014 but there had occurred some technical problems in the code of the banner and pop-up so that they did not appear on the site. In the end, the questionnaire was online working for four weeks. In the last week of data collection, the pop-up was changed in a way that it bounced automatically in the middle of the screen after 45 seconds of the visit. This was done to boost the response rate bigger and to invoke the page visitors to respond to the questionnaire. The boost seemed to help since there was a rise in the amount of responses during the last week.

4.3.3 Measures

In quantitative research it is possible to modify qualitative variables to quantitative form. Features of people or quality of things are possible to structure with numeric symbols. Theoretical abstracts and concepts are operationalized in a casual, more understandable way. In operationalization phase, the researcher breaks down the variables in smaller parts like questions and response options to be able to demonstrate that the research method measures the correct matters reliably. (Nummenmaa 2004, 33; Vilkka 2007, 14–15, 36–38.)

The questions and the response options were operationalised from the theories and results of previous studies discussed in the earlier chapters. The measures of digital service quality followed mainly the measures of Gummerus 2010, but they were modified to fit to this specific context. Since there were no validated measures of the usage of content-based digital services available at the time of the study, questions were adapted from several sources based on the literature overview (see chapters two, three and four), and based on the synthesis made (see chapter 3.5.). When creating the measures of a research, it is important to make sure that all the questions are exclusive compared to each other and that the response options are designed to be worthwhile and reasonable Vilkka 2007, 78).

If there is only one attribute of the object or construct being studied (e.g. age or sex), a single-item scale is enough, but if the aim is to measure more complex object or construct, it is necessary to measure several attributes in order to form a complete picture of the construct. Then, multiple-item scales are designed. (Hair et al. 2003, 437.) Especially the constructs of service quality and usage needed multiple-item scales to measure, whereas the background information was gathered mainly with single-item scales. The questionnaire should also be kept rather easy to answer in order to achieve as big answer rate as possible (Heikkilä 2005, 51–52). Most of the response options were designed in a five-point Likert scales. Likert scales are commonly used in surveys and especially when measuring quality (Allen & Seaman 2007, 64). Likert scales were also seen sufficient enough for the statistical analysis done later since Likert scales are often treated as interval scales. Interval data is usable for parametric statistical tests which are more advanced and more powerful than nonparametric alternatives. (Allen & Seaman 2007, 64.) On one hand, the advantage of an attitude scale as Likert scale is that a lot of information is gathered in a little space. On the other hand, the disadvantages of a Likert scale are that the weight of different answers cannot be measured and that the previous answers might influence the other answers. The respondent aims to give logical answers and might therefore change the answers given in order to make sense a whole. (Heikkilä 2005, 52–53, 81.) The operationalization process can be seen from the Table 2 below.

Table 2 Operationalisation table

Purpose of the study:	Sub-questions:	Theoretical background:	Questionnaire questions:
The study aims to find out how consumers perceive the quality of the digital service maintained by a pharmaceutical company and for what purposes do they use the service.	For what purposes consumers use content-based digital services?	*definitions and characteristics of digital services, usage of digital services, changed role of a patient, customer empowerment*	Background questions, Q1-2, Q6-7, Q9, Q12-13
	How do the consumers perceive the quality of the service?	*digital service quality*	Q3-5, Q8 Q10-11
	How does the usage and perceived service quality across different user groups?	combination of previous	combination of previous

4.4 Data analysis

In the end, the questionnaire resulted 95 responses in total. The sampling was self-selective: everyone visiting the website was able to answer the survey. All users of the website formed the population of this study. As there were 9815 users on the website during the questionnaire being online (Google Analytics Report 2015) the answer rate was less than 1 %.

The data analysis was done with IBM SPS Statistics (version 22), which is commonly used statistics software for statistical analysis. Both descriptive statistical and multivariate methods were used to analyse the data. Before the actual data analysis, preliminary data examination should be done. Identification of possible outliners and missing data is recommended (Hair, Black, Babin & Anderson 2010, 33–34). Depending on the question, there were two to nine missing responses, persons who did not answer the particular question. Two observation units were deleted due to missing or adverse data since those answers had clearly been given as a joke. After that, the sample size was 93 responses (N=93).

The data was analysed with descriptive statistical methods that presented the statistics in an easily readable and interpretable tables and figures. Average values, frequencies and percentage shares were produced as well. (Vilkka 2007, 118–120.) Moreover, few multivariate methods were used in order to have more detailed, deeper research results. The aim of multivariate analyses is to reduce the amount of information, create an overview on the subject researched, find a combination of explanatory variables which predict the values of dependent variables, or combine variables into groups of which behaviour is similar but there is difference found between the groups. (Tolonen 2014, 6–8.) Multivariate method used in this study was *principal component analysis (PCA)* which is similar to factor analysis. Factor analysis is used when

- there is a need to structure of a set of variables,
- questionnaire is constructed to measure an underlying variable,
- the amount of data is wished to be reduced to a more manageable size but still retaining the information from the original data. (Field 2009, 628.)

PCA is sometimes considered as factor analysis even though they are both mathematically and philosophically different methods. In factor analyses, latent variables are driven from the original data based on mathematical estimates whereas in PCA, original variables are reconstructed into new variables, principal components, which are a set of linear variates. PCA variables are quantitative and continuous but in distinction to many other multivariate analyses, there is no division into explanatory and dependent variables. PCA analyses the variance between the variables whereas factor analysis analyses the covariance between the variables. The assumptions are not as strict as in other multivariate methods. There is no assumption of normality or correlation demand. Statistically significant correlations are assumed to exist between the variables. (Field 2009, 638; Heikkilä 2005, 247; Nummenmaa 2004, 344; Tolonen 2014, 10, 12.)

PCA is often used as a basis of other analyses when further analysis can be carried out on the principal component scores rather than the original ones (Field 2009, 636; Heikkilä 2005, 247). In this study, the questionnaire was designed to gather a lot of detailed information and measure the constructs comprehensively, and PCA was used in order to summarize the information into fewer sums of variables. PCA revealed variables that loaded to same component. The means of these variables were adjusted as a sum of variables (keskiarvosummamuuttuja) which were analysed further regarding the different user groups. The means of these new subsets of variables were compared with *independent t-test* and *one-way ANOVA*. Sometimes researchers are more interested in the differences between groups of people rather than relationships between variables. The simplest method is comparing two means of groups. Independent t-test compares two means and measures their difference. One-way ANOVA compares several means together.

Also the measures need to be validated. Before PCA, suitability of the correlation matrix (see tables 3–6) for PCA was examined with Barnett's test of sphericity, which investigates the null hypothesis, and with Kaiser-Meyer-Olkin measure of sampling adequacy (KMO), which measures the adequacy of the sample. Barnett's test should remain under the significance level (<0.05), and KMO should result the minimum value of 0.5. Values between 0.5 and 0.7 are mediocre, values between 0.7 and 0.8 are good, values between 0.8 and 0.9 are great and values over 0.9 are excellent. (Metsämuuronen 2006, 622; Field 2009, 647–648, 659.) Both the Barnett's tests ($p<0.05$) and KMOs (>0.5) resulted adequate values in all PCAs except in question six (On which subject did you look for information when entering the website?) where KMO first resulted inadequate value. There were variables which loaded somewhat evenly to four different components. After careful consideration and several rounds of principal component analysis, few variables, which cross-loaded to several components, were deleted, and three components emerged.

The goodness of the principal components can be evaluated also analysing their loadings. One of its dimensions to be considered is communality. As stronger as a variable loads to a component, closer the component is to value 1. Communality is an indicator of the percentage of the variance that can be explained with the principal components. If a variable receives low communality, it can be deleted from the analysis since these variables disturb the analysis. Rule of thumb is that communalities should be all above 0.3. (Metsämuuronen 2006, 621.) The results of the principal component analysis are presented in the tables below.

Table 3 Component and correlation matrix for the quality of service usability

Question 4: Service quality, usability	KMO=0.759; Barnett's test=p<0.001		
Components	**Eigenvalues**	**% of Variance**	**Communalities**
USABILITY	3.157	63.15	
It is easy to find the information I need from the website.			0.894
Information is well structured.			0.849
The website is easy to navigate between pages.			0.795
I am satisfied with the structure of the interface.			0.766
I am satisfied with the design of the interface.			0.647
Principal component analysis, Varimax rotation, N=93			

Table 4 Component and correlation matrix for the quality of service content

Question 5: Service quality, content	KMO=0.831; Barnett's test=p<0.001		
Components	**Eigenvalues**	**% of Variance**	**Communalities**
OVERALL CONTENT QUALITY	4.219	46.88	
The content is essential.			0.716
I find the content of the website informative.			0.633
The content is up-to-date.			0.626
I am satisfied with the content of the website.			0.645
The information on the website is reliable.			0.37
PERSONALIZED CONTENT QUALITY	1.259	13.994	
I have benefited from the information on the website.			0.679
I think the website is targeted to me.			0.559
I found what I was looking for.			0.631
Principal component analysis, Varimax rotation, N=93			

Quality of the service usability loaded on one principal component as expected. PCA was executed to test if the measure was correct. Quality of the service content extracted two principal components. The variables considering the content of the website being essential, informative, up-to-date, satisfying and reliable loaded to one factor, and variables considering the content of the website being beneficial, targeted to the respondent's need, and that the respondent found what came looking for, loaded to other

factor. *I think the content of the website is interesting* cross-loaded to both factors and was therefore deleted from the analysis. The total cumulative percentage covered 60.9 %. The first principal component that was formed was labelled *the overall quality of the content* of the website. The second principal component was concerning more the feeling of personalized content of the website or that the content was targeted to the respondent's personal needs. That is why it was labelled as *personalized content quality*.

Table 5 Component and correlation matrix for the usage of the service

Question 6: Usage, subject that came for	KMO=0.608; Barnett's test=p<0.001		
Components	**Eigenvalues**	**% of Variance**	**Communalities**
EXPERIENCES OF THE DISEASE	3.136	38.84	
The experiences and stories of others depressed?			0.866
Depression as a disease: medical explanation.			0.716
Depression as a disease: what led to it / can lead to it?			0.692
The experiences and stories of relatives?			0.655
The experiences and stories of nursing personnel?			0.588
SURVIVAL FROM THE DISEASE	2.067	22.963	
Survival from depression: how to seek treatment?			0.862
Survival from depression: how to get through?			0.772
SYMPTOMS AND IDENTIFICATION	1.228	13.639	
Symptoms of depression: what are the signs of depression?			0.748
Identification of depression: am I / is another person depressed?			0.53
Principal component analysis, Varimax rotation, N=93			

Table 6 Component and correlation matrix for the benefit of the service

Question 9: Usage, benefit of the service	KMO=0.864; Barnett's test=p<0.001		
Components	**Eigenvalues**	**% of Variance**	**Communalities**
EMOTIONAL BENEFIT	5.796	52.688	
I felt relieved due to the got information on the website.			0.641
I am not so insecure about the subject.			0.689
I received support.			0.662
I understand the disease better.			0.662
I know how to proceed from now-on.			0.618
FUNCTIONAL BENEFIT	1.033	9.39	
I saved time because of the information on Masennusinfo.fi.			0.747
I find myself more empowered now than before my visit to the website.			0.63
I can utilize the information received when meeting with medical staff.			0.655
I can pass forward the information I read.			0.529
I can follow my condition better.			0.537
Principal component analysis, Varimax rotation, N=93			

Three principal components extracted from the PCA for the subject that the respondent came for to the website. The first principal component that was formed was concerning the *experiences of the disease*. This was considered as the strongest explanatory factor on the matter (34 %). The second component concerned the *survival from the disease* (20 %) and the third component the *identification and symptoms* of the disease (17 %). The overall coefficient of determination was 71 %.

From the last PCA for the benefit of the service, two principal components extracted from the sample. The first principal component that was formed was concerning the *emotional benefit* from the website. This was considered as the strongest explanatory factor on the matter (32 %). The second component concerned the *functional benefit* on the subject (29 %). *I am able to give support* cross-loaded to both factors and was therefore deleted from the further analysis. The overall coefficient of determination of the factors was 62 %.

Before any further analysis, the reliabilities of the extracted principal components were analysed with Cronbach's Alpha. Cronbach's Alpha is also an examination of a reliability of a measure. The threshold value depends on the sample size but is usually considered 0.6. (Metsämuuronen 2006, 67; 459–461.) Adequate Crombach's Alpha values (Table 7) vary between 0.695 (personalized content) and 0.861 (emotional benefit). The only inadequate value resulted from usage of the service where the third

principal component, *symptoms and identification*, produced a negative value (-0.96). Since negative values are not adequate, the variables in the component (symptoms and identification) were examined more in detail. Due to the negative correlation between variables (see Table 8), they could not be analysed together as a principal component, and other one, *Symptoms of depression: what are the signs of depressio*n, was chosen to represent the component as a whole in further analysis because of its stronger communality (see Table 5) (Metsämuuronen 2006, 621).

Table 7 Internal consistency reliability of the measures

Measure	Cormbach's Alpha	Number of items
SERVICE QUALITY		
Usability	0.853	5
Overall content	0.804	5
Peronalized content	0.695	3
USAGE		
Experiences of the disease	0.835	5
Survival from the disease	0.709	2
Symptoms and identification	-0.096	2
USAGE / BENEFIT		
Emotional benefit	0.861	5
Functional benefit	0.835	5

Table 8 Correlation between variables in Symptoms and identification

Inter-Item Correlation Matrix		
	Identification of depression: am I / is another person depressed?	Symptoms of depression: what are the signs of depression?
Identification of depression: am I / is another person depressed?	1	-0.05
Symptoms of depression: what are the signs of depression?	-0.05	1

Both in independent t-test analysis and one-way ANOVA analysis, Levene's test was used as a measure of variance equality. If Levene's test is significant, there is statistical difference between the means of the two groups. (Field 2009, 340, 348.) Levene's test tests the homogeneity of variances; the null hypothesis that the variances of different groups are equal. Most of the tests did not result statistically significant difference in the variances within the groups of the principal components. In question five, when

comparing the two principal components (*overall content* and *personalized content quality*) with the background variable *visiting regularity*, Levene's test resulted p-value of 0.026 (<0.05) for the *overall content quality* which means that statistically significant difference in the variance of *overall content quality* was found. Therefore, overall quality component is not applicable for one-way ANOVA. However, if the homogeneity of the variance assumption is broken, Robust Welch test is an option for comparing the variances between the groups (Field 2009, 379−380). Also question six about the subject that came to look information for resulted inadequate results. When comparing the three principal components (*experiences of the disease*, *survival from the disease* and *symptoms and identification*) with the background variable *education*; Levene's test resulted adequate p-values for the first two components (*experiences* and *survival*) but only 0.023 (<0.05) for *symptoms*. Therefore, ANOVA F-test was applicable for *experiences* and *survival* but not for *symptoms*. Then, Welch's Robust test was analysed. However, in both cases in questions five and six, there was no significant difference found in Welch's test either. All other Levene's tests in all the questions resulted p-values below the significance level ($\alpha = 0.05$).

4.5 Evaluation of the research

Research is successful when it results trustworthy answers to the research questions (Heikkilä 2005, 29). In quantitative research, reliability and validity are the most important attributes of the measurements and together they formulate the overall trustworthiness of the research. In order to be able to generalize the results, evaluation of reliability and validity of the research have to be done. Validity indicates the ability of the research to measure what was supposed to, and it can be divided into internal and external validity. External validity examines if the study and its results can be generalized. Internal validity tells if both the research questions and theory are operationalized well in a form of a questionnaire. Reliability, in turn, signals whether the study gives non-coincidental results. Therefore, reliability examines the repeatability of the research. (Metsämuuronen 2006, 42−44; Vilkka 2007, 149−152.)

The *validity* of the research is important to examine. In internal validity, the focus is on the phase before the actual survey where theoretical concepts were operationalized from the previous literature to the survey. If there are no specific goals for the research, wrong matters are often studied and measured. (Heikkilä 2005, 29; Vilkka 2007, 150.) The synthesis (Figure 10) done in the end of the theoretical background of this study and the operationalization table (Table 2) were used as a base for the questionnaire of this study in which the purpose of the study, sub-research questions and theory were broken down to questionnaire questions. The questionnaire was based on the previous

research of digital service quality but modified to apply to this particular setting by language, order of the questions and response alternatives. Concreteness was also taken into account by carefully keeping an eye on the language and wording of the questionnaire. In this way, the research was pursued to be valid. Considering internal validity, the challenge was that there were no suitable measures available on the usage of digital services but they needed to be composed based on the findings of previous researches.

Internal validity is also examined via testing of the measures and their reliabilities. This was done in the case of the present study as well. PCA was examined with Barnett's test of sphericity, which investigates the null hypothesis, and with Kaiser-Meyer-Olkin measure of sampling adequacy (KMO), which measures the adequacy of the sample. Moreover, communalities of the loadings in PCA describe the goodness of principal components. The reliability of PCAs was examined with Cronbach's Alpha. Both in independent t-test analysis and one-way ANOVA analysis, Levene's test was used as a measure of variance equality. If Levene's test is significant, there is statistical difference between the means of the two groups. (Field 2009, 340, 348.) Even though most of the analysis resulted adequate values, there were few exceptions which needed to be fixed. The exceptions were deleted so that they do not disturb the analysis (Metsämuuronen 2006, 621).

Adequate Crombach's Alpha values (Table 7) varied between 0.695 and 0.861. The only inadequate value resulted from usage of the service where the third principal component, *symptoms and identification*, produced a negative value (-0.96). Since negative values are not adequate, the variables in the component (symptoms and identification) were examined more in detail. Due to the negative correlation between variables (see Table 8), they could not be analysed together as a principal component, and other one, *Symptoms of depression: what are the signs of depressio*n, was chosen to represent the component as a whole in further analysis because of its stronger communality (see Table 5) (Metsämuuronen 2006, 621). Most of the Levene's tests did not result statistically significant difference in the variances within the groups of the principal components. There were few exceptions: In question five, when comparing the two principal components (*overall content* and *personalized content quality*) with the background variable *visiting regularity*, and in question six, when comparing the three principal components (*experiences of the disease*, *survival from the disease* and *symptoms and identification*) with the background variable *education*. However, if the homogeneity of the variance assumption is broken, Robust Welch test is an option for comparing the variances between the groups (Field 2009, 379–380). In both cases, there was no significant difference found in Welch's test either.

Internal validity needs to be evaluated throughout the research process (Vilkka 2007, 149–152). In this study, the internal validity was considered also by testing the

questionnaire before going online. As mentioned, there were eight people who tested the questionnaire and gave feedback before publishing it. The questionnaire was then modified based on the feedback and therefore the validity was considered also during the research process. However, the questionnaire resulted being somewhat long. Even though the questions were tested by several people, the questions should have been reviewed more critically. Due to the length of the questionnaire, also the measurements and analysis of the results were laborious to conduct. For example, number of the questions regarding the background information should have been reduced and more rigorous limitation should have been made (in research questions).

The ability of the research to be generalized, external validity, can be examined through nonresponse and skewness of the sample. If the sample is small, the results are non-coincidental and they are not able to generalize. The sample cannot either be skewed but it has to represent the whole population well. (Heikkilä 2005, 30.) The skewness of this study is hard to examine since the there was no detailed information on the population beforehand (e.g. overview of the average website user). Population of the research are assumable dispersed around Finland since the service is available online to everyone in Finnish, they are interested in depression since they use the service and they have an access to Internet since the service is available only online.

The nonresponse is easier to analyse. As there were 9815 users on the website during the questionnaire being online (Google Analytics Report 2015) the response rate of this survey was approximately 1 % which is very low and which disturbs the validity of the research. However, low response rate can be explained through many issues. If the high bounce rate (65 %) is taken into consideration, and all the users leaving the website after first view are eliminated, the answer rate lands to approximately 3 %. The survey was conducted via pop-up survey which usually generates small samples. This risk was taken intentionally due to the strict regulations of the industry. Since the website does not collect any personal information about its user, survey on the website was the only possible data collection method. Pop-up window studies response rates typically are very low, only between 5 to 15 % (Rapp 2001). Also, the topic that the research concerned, depression, is a sensitive theme. Users of the website might not want to reveal details about themselves in surveys. They might not even want to admit that they are, or that they believe being depressed. Depression is many times seen as a tabu. Also, since depression reduces the cognitive ability and functioning, even visiting a website like Masennusinfo.fi is an accomplishment not to mention answering to a questionnaire. It might feel impossible. This is called social desirability bias where some sensitive themes distort the responses easily (Terho 2014).

Low response rate questions if the sample represents the population. However, the responses were in accordance with the average statistics of depressed people, and the service was mainly used for their own needs. Therefore, even though larger sample or

more detailed research would be in place, as an exploratory research the sample can be generalized. Exploratory research may lead to conclusive research sometimes (Malhortha & Brikes 2007, 70).

Reliability means the ability of the research to be replicable and give non-coincidental results. It evaluates whether the results of the research are reliable and accurate. Research is reliable if it produces same results if it is repeated. (Heikkilä 2005, 30; Vilkka 2007, 149.) The survey could be executed again since all the materials are still available. If the survey was carried out again, it could be seen if the results would change significantly. Due to the small sample, the same survey could produce different kind of answers. However, low response rate would be expected even if the survey was repeated since it was implemented as a pop-up survey and since the subject is very sensitive.

It is also important to examine if any kind of measurement errors have occurred (Vilkka 2007, 150). As one of the advantages of a quantitative research is that the data is easy to work on, not many measurement errors estimated to occur. Respondents answered to the same questions and as in online surveys, their answers were automatically coded to data that was transferred in original form to SPSS. Also the measurements of the results were taken as far as possible with the current data. As described earlier, depending on the question, there were two to nine missing responses, persons who did not answer the particular question. Only two observation units were deleted due to missing or adverse data which had clearly been given as a joke. This is a good result since the rule of thumb in missing data analysis is that missing values can generally be ignored as long as the amount of the missing data does not exceed 10 % for an observation or variable (Hair et al. 2010, 47). Even at the greatest, the percentage did not exceed the limit.

The overall trustworthiness of the research consists of validity and reliability together. Usually, the overall trustworthiness of the research is good if the sample represents the population well and if there have not occurred significant measurement errors. (Heikkilä 2005, 185.) The reliability of this research is considered somewhat trustworthy but when estimating the validity of this research the issues mentioned before should be taken into account. For example, the low response rate (1 %) reduces the generalization of the research to the population.

5 RESULTS OF THE RESEARCH

The analysis of the research results was started from careful examination of descriptive statistics in order to form a clear picture of the sample and so that the usage and perceived quality of the website would be easier to interpret. Firstly, the background information of the respondents was presented in order to know who the users of the service were. Users of the service were examined more in details according to their sex, age, education background and socio-economic status. There was also a question regarding the reason to enter the website and how often they visit the website.

Secondly, the results were examined in the light of the usage and perceived quality of the service. The questionnaire questions regarding to usage and perceived quality were also analysed thought principal component analysis in order to see whether the diffuse response alternatives were able to adjust in smaller groups. Finally, the usage and the perceived were compared between groups of people in user groups to see whether more highly educated people perceive the service quality better, for example. Next, the results of the research are discussed in detail.

5.1 Service user information

The questionnaire contained relatively many questions regarding the background information about the respondents. The respondents were asked about their sex, age, education background, socio-economic status and visiting regularity. There was little, if anything, known about the users of the service before, and therefore, the information was essential not only for the research but also for the service provider, Lundbeck Finland. The sample consisted of 93 responses.

Majority of the respondents were women (74 % women, 26 % men). In the questionnaire, respondents chose their year of birth from the list of years, but in the analysis the results were categorized into age groups. The biggest age group was 18–29 year-olds, but due to the small number of respondents under 18, the groups were merged to form an age group for 16-29 year-olds (42 %) for further analysis. The second biggest age group was 50–65 year-olds (23 %) (mean=2.2, median=2.0, standard deviation=1.256). There was no over 65 year-olds in the sample.

There were two socioeconomic groups standing out from the sample: 46 % of the respondents were *employees* and 39 % were *students*. Other groups were so small (8 % unemployed, 2 % self-employed and 2 % could not specify) that they were merged into one group for further analysis, *other,* which resulted 15 % of the respondents. None from the respondents were on a maternity, paternity or nursing leave even though those were an option in the questionnaire.

Majority of the respondents hold (or were enrolled to) a university or other higher level of education degree (41 %). Also University of Applied Sciences (24 %) and vocational school (20 %) were well represented in the sample. Comprehensive school and vocational school were merged into one group due to small amount of responses resulting then a share of 24 % together.

Table 9 Different user groups of the service

User groups (N=93)	**Frequency**	**Valid Percent**
SEX		
Women	68	73.9
Men	24	26.1
Total	92	100
Missing System	1	
Total	93	
AGE CATEROGIES		
16-29 years old	38	42.2
30-39 years old	15	16.7
40-49 years old	16	17.8
50-65 years old	21	23.3
Total	90	100
Missing System	3	
Total	93	
SOCIO-ECONOMIC STATUS		
student	35	38.5
employed	42	46.2
other	14	15.4
Total	91	100
Missing System	2	
Total	93	
EDUCATION BACKGROUND		
Comprehensive or vocational school	22	24.2
High-school / Upper secondary school	10	11
University of Applied Sciences	22	24.2
University or other higher level education	37	40.7
Total	91	100
Missing System	2	
Total	93	

As described earlier, the bounce rate of Masennusinfo.fi was rather high (70 %) which indicates that the website is left without interacting with it or without browsing any further. Users were also asked about the visiting regularity on the website. It turned out that most of the respondents visited the website for the first time (76 %) which is in

line with the overall users of the website (Google Analytics report 2015) and which may explain the bounce rate as well. There are not a lot of service users that return to the website.

5.2 Usage of the digital service

In the questionnaire, there were also questions related to the usage of the website. The aim was to find out for what purposes the service is used. There was a question about the reason the respondent visited the website. Answer options were *because of my-self, because of my close-one, because of my patient / client* and *because of general interest*. Only one respondent visited the website because of his or her patient / client and therefore, due to the small amount of respondents in this group, *Because of my patient / client*, the group was deleted. Results show that 46 % visited the website because of themselves, 36 % because of general interest and 18 % because of their close-one. The results are contradictory to the previous research since typically the search for health information on the Internet is taken behalf of someone other than the seeker himself (Fox 2011). However, the group *because of general interest* was rather large which may indicate that the respondents did not want to specify their reason visiting the website.

Respondents were also asked the reason why they visited the website. Majority (31 %) wanted more information on the subject. The second biggest group could not specify the reason (other reason 29 %) and the third biggest group (23 %) wished relief to their condition. This question turned out to have too vague answer options. Resulting high number of responses in the option other reason may indicate that the question was seen too intimate, the answer options were not reasonable or that there was a lack of correct answer options. Also, the option “cannot say”, or in this case, “other reason” is tempting in closed questions. (Heikkilä 2005, 51–56.) However, 23 % wished relief to their condition.

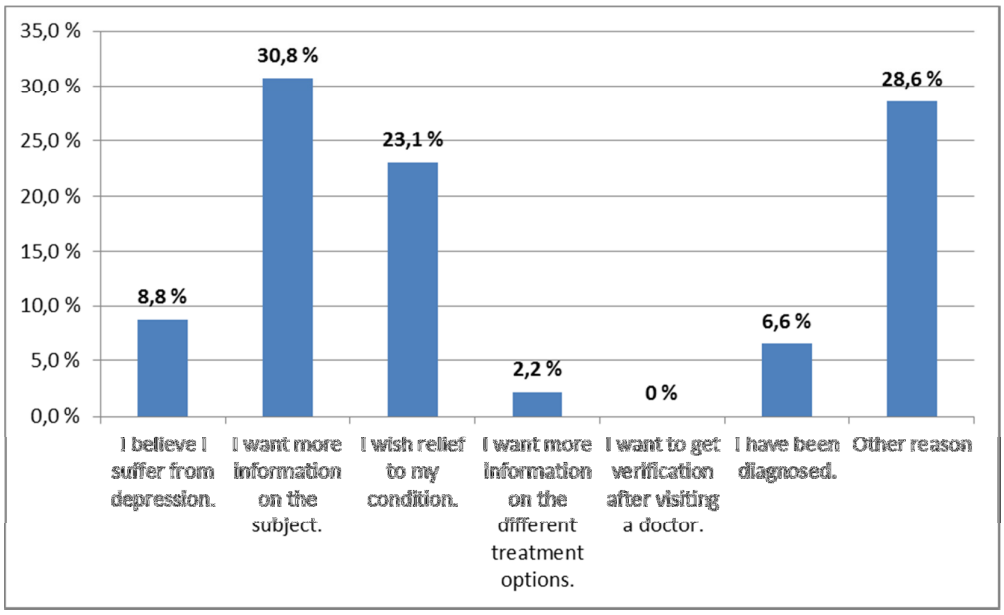

Figure 10 Reason to visit the website

Respondents were also asked to evaluate which subject they came looking information for. They were asked to rate the five most important subjects for them from the list of several options so that the most important subject receives value one (1) and the fifth most important the value five (5). The graphs below show two variations of the analysis of the responses. The first graph shows the distribution of the responses between the importance rate of 1-5. The subjects that were most often considered the most important (received the biggest amount of value 1) were *Identification of the depression* (41 %), *Symptoms of depression* (40%) and *Survival from depression: how to get through* (35 %). The second graph presents the results in total points. High importance rate equals to high amount of points. *Symptoms of depression* is notably the most important subject on which the respondents came to look for information receiving 283 points in total. The second most important subject is *Survival from depression: how to get through* (214 points) and the third *Treatment of depression: how is it treated?* (212 points). *Identification of depression* also received over 200 points in total (205 points).

Overall, the most important subjects considered on the website are mainly related to the early stage of depression; to the time that symptoms may have arose and that there is not that much certainty yet. Also survival and treatment in general were considered interesting. This is all in line with the literature; people usually go online to figure out a medical condition before seeing a doctor, or even conduct searches as a habit, without specific reason (Fox & Duggan 2013; Fox 2008). Answers to this question may bring clarification to the previous two questions; as the most important subjects considered on

the website are mostly related to the early stages of depression, the respondent may not be able to classify yet the reason of using the service.

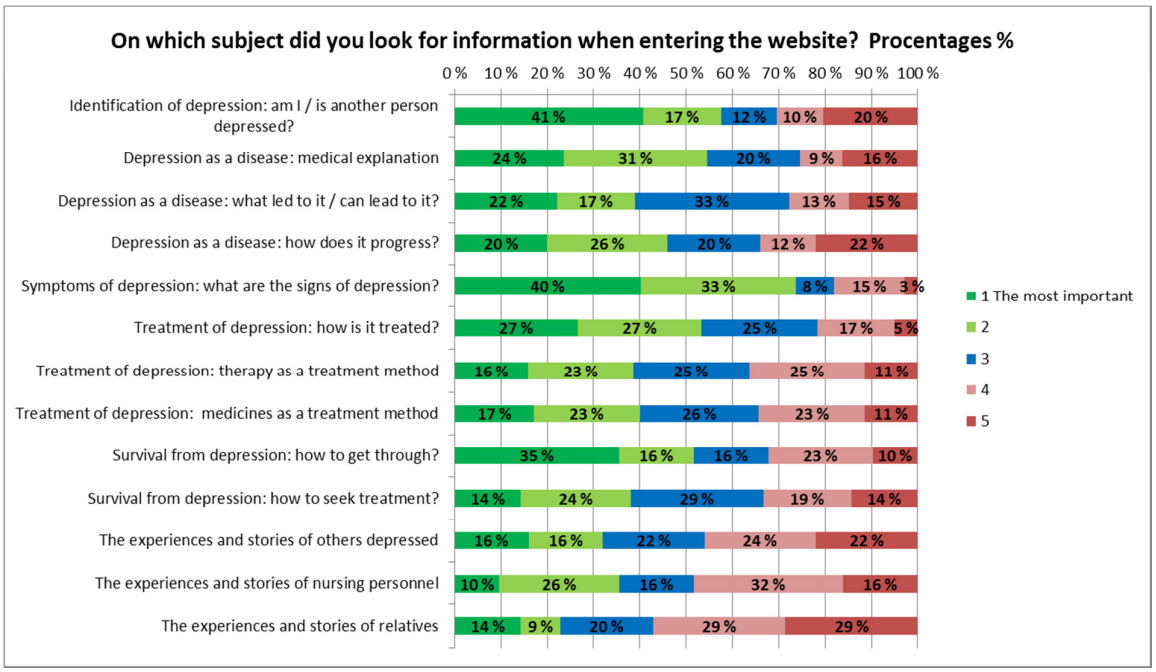

Figure 11 The most important subjects on the website, importance rate distribution

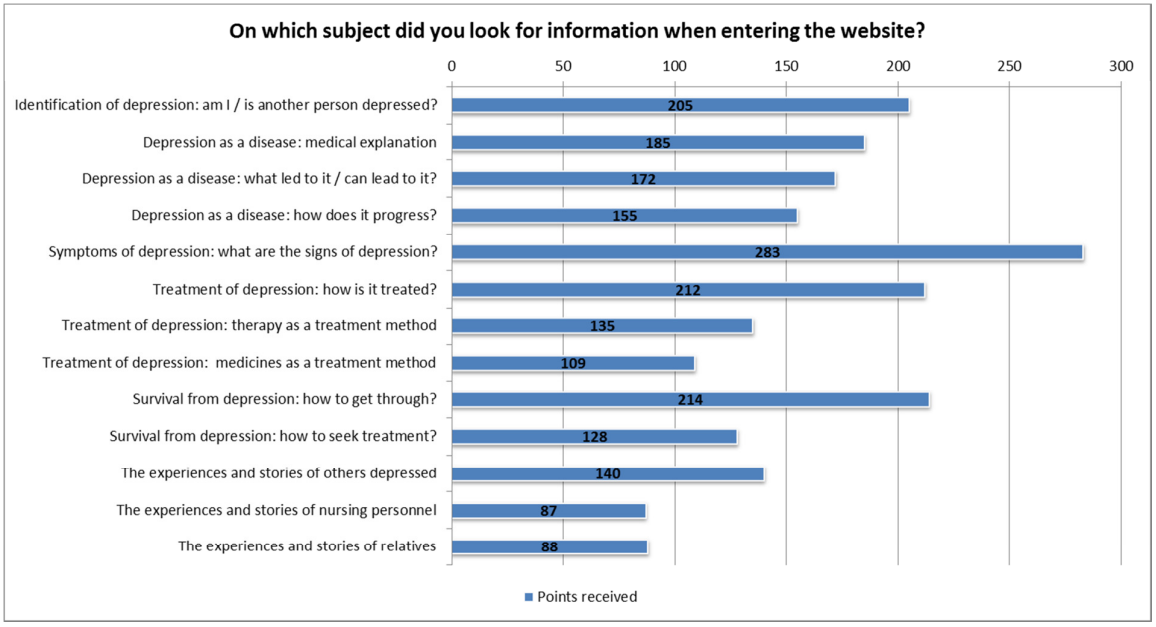

Figure 12 The most important subjects on the website, total points received

Respondents were also asked about the usefulness of the current website categories. The website is divided into six categories, or headlines: *Depression, Symptoms,*

Treatment, Survival from everyday life: patient stories and experiences, News: cognitive performance and *Anxiety disorders*. Respondents were asked to evaluate the categories in five-point Likers scale. All categories were evaluated positively on average as can be seen from the Table 11 below. *Symptoms* was ranked the most useful category (mean=4.45) but the difference to other categories was not significant. *Survival from the everyday life* was ranked the poorest (mean=3.93). Responses in this question are in line with the answers of the previous question.

Table 10 Evaluation of the usefulness of the current website categories

	Mean	N	Std. Deviation
Depression	4.37	90	0.827
Symptoms	4.45	89	0.707
Treatment	4.26	89	0.805
Survival from everyday life: patient stories and experiences	3.93	90	1.047
News: cognitive performance	3.98	88	0.788
Anxiety disorders	4.14	90	0.842

Usage of the service was also discovered by presenting items and how well those items describe the benefit of the service (Appendix 1). Very strong agreement can be seen in the items of *I find myself more empowered now than before my visit to the website, I understand the disease better* and *I can pass forward the information I read* which were all agreed or strongly agreed by 70−80 % of the respondents. Also *I can follow my condition better* and *I am more able to give support* were agreed or strongly agreed by over 50 % of the respondents. Correspondence to the theoretical background is seen. Internet is not used only to search for information but also to find emotional support (Meier et al. 2007). E-health services are usually used for someone else or before seeing a doctor to figure out a possible diagnosis (Fox & Duggan 2013). However, majority of the respondents of the present study used the service because of themselves (46.1 %). As can be seen in Appendix 1, the area *Neither agree nor disagree* is rather large as well in all the items. This may indicate that the items were not understood well or that they did not correspond to the benefits that the respondents felt they received.

There was also a question about the development of the website. This question was posed more for the needs of the cooperation company Lundbeck Finland. There were seven given claims which the respondents had to evaluate from 1−7 as how important they viewed the developing matter. Note the reverse order of evaluation: The smaller

the value, the more important the subject in question was seen. The sentences were *More diverse content, Content written in more plain language, Easier to use the website, News and current topics or new materials related on the subject, Articles and interviews from experts, Experiences and interviews of patients* and *Q&A*.

The question produced many missing answers which could have been derived from the length of the questionnaire or from badly posed question. *News and current topics or new materials related on the subject* was seen the most important developing area (mean=3.01), *Articles and interviews from experts* was seen as the second most important area (mean=3.58) and *Q&A* as the third most important developing area (mean=3.56). The newest articles on the website are published in July 2014 and the previous in January 2014. Since the respondents were rather highly educated this kind of inactivity might stand out from the website. *Content written in more plain language* was seen the least important area of development which expresses that the text on the website is well written and understood by the users of the service.

Table 11 Development areas on the website

	More diverse content	Content written in more plain language	Easier to use the website	News and current topics or new materials related on the subject	Articles and interviews from experts	Experiences and interviews of patients	Q&A
Valid N	84	82	82	84	85	84	84
Missing N	9	11	11	9	8	9	9
Mean	3.60	4.98	4.68	3.01	3.31	3.58	3.56
Mode	5	7	6	1	3	1	2
Std. Deviation	1.921	2.120	2.125	1.632	1.732	1.959	1.878
Minimum	1	1	1	1	1	1	1
Maximum	7	7	7	7	7	7	7

5.3 Perceived quality of the digital service

In the questionnaire, there were questions related to the quality of the service. One of the research questions was how consumers perceive the service quality in digital environment. As described in the theoretical part of this thesis, service quality is divided into usability and content which together constitute the overall service quality.

Usability of the website was the first question that concerned the perceived service quality. The respondents evaluated the service according to given items with a five-point Likert scale. The items were *It is easy to find the information I need from the website, Information is well structured, The website is easy to navigate between pages, I am satisfied with the structure of the interface* and *I am satisfied with the design of the interface.*

Usability was perceived positively since very high majority agreed or strongly agreed on the arguments presented. *Information is well structured* received the highest positive rates on average (mean=4.11) but with no significant difference to others. Only the item *I am satisfied with the structure of the interface* resulted bigger share of disagreement since 13 % of the respondents disagreed with the sentence. There was also the widest dispersion of the answers there (std. deviation 0.985). However, on average this item was evaluated somewhat positively as well (mean=3.91).

Table 12 Evaluation of the usability of the service

		It is easy to find the information I need from the website.	Information is well structured.	The website is easy to navigate between pages.	I am satisfied with the structure of the interface.	I am satisfied with the design of the interface.
N	Valid	91	91	91	91	91
	Missing	2	2	2	2	2
Mean		4.05	4.11	4.1	3.91	3.97
Std. Deviation		0.736	0.9	0.895	0.985	0.767
Minimum		2	1	2	2	2
Maximum		5	5	5	5	5

Also the content was evaluated similarly. The items were *I find the content of the website informative, The content is up-to-date, The content is essential, I think the content of the website is interesting, The information on the website is reliable, I found what I was looking for, I have benefited from the information on the website, I think the website is targeted to me* and *I am satisfied with the content of the website.* The item *The content is essential* was evaluated the best in quality (mean=4.34). This was also the only item that did not receive any negative evaluations (minimum 3). *I find the content of the website informative* received the second best evaluations. *I think the website is targeted to me* received the weakest evaluations (mean=3.30), and there the dispersion of the answers was the widest as well (std. deviation=1.126).

The results show that the content of the service is perceived relevant but may not be targeted to the user himself. This might be derived from the usage purposes. Majority of the respondents visited the website for the first time (76 %). They could not know for which purposes or to whom the service is targeted. There was also a high amount of respondents who visited the website because of general interest (36 %), and majority (31 %) wanted more information on the subject when asking about the reason for the visit. Most of the respondents visited the website because of themselves (46.1 %) and very strong agreement was resulted in the question of the benefit of the service with

sentences like *I find myself more empowered now than before my visit to the website, I understand the disease better* and *I can pass forward the information I read.*

Table 13 Evaluation of the content of the service

		I find the content of the website informative.	The content is up-to-date.	The content is essential.	I think the content of the website is interesting.	The information on the website is reliable.	I found what I was looking for.	I have benefited from the information on the website.	I think the website is targeted to me.	I am satisfied with the content of the website.
N	Valid	90	90	90	89	91	91	89	88	91
	Missing	3	3	3	4	2	2	4	5	2
Mean		4.27	4.13	4.34	4.17	4.09	3.68	3.65	3.3	3.89
Median		4	4	4	4	4	4	4	3	4
Std. Deviation		0.65	0.974	0.639	0.801	0.709	0.893	0.978	1.126	0.809
Minimum		2	1	3	2	2	2	1	1	2
Maximum		5	5	5	5	5	5	5	5	5

The respondents perceived the overall quality of the website positively. 83 % of the respondents rated the sentence *Masennusinfo.fi offers high quality service* to describe the website either well or very well, 79 % rated the sentence *I value Masennusinfo.fi services highly* to describe the website either well or very well, and 71 % felt *The time spent on Masennusinfo.fi was well spent* well or very well.

Table 14 Overall quality

	Masennusinfo.fi offers high quality service.		I value Masennusinfo.fi services highly.		The time spent on Masennusinfo.fi is time well spent.	
Valid	Frequency	Valid Percent	Frequency	Valid Percent	Frequency	Valid Percent
Poorly	2	2.3	4	4.6	7	8.1
Neither well nor poorly	13	14.9	14	16.1	18	20.9
Well	49	56.3	46	52.9	38	44.2
Very well	23	26.4	23	26.4	23	26.7
Total	87	100.0	87	100.0	86	100.0
Missing	6		6		7	
Total	93		93		93	

Respondents were also asked if they were likely to visit the website again or if they were likely to recommend the website. 41 % of the respondents considered somewhat likely and 19 % very likely that they would visit the website again. Likelihood to recommend the website was somewhat similar: 43 % thought it was somewhat likely and 26 % very likely that they would recommend the website.

Expectations play a huge role in the perception of service quality. There was also a general question about the expectations included in the questionnaire. It was mainly posed to be able to see if it was in line with the other results. Majority of the visitors thought the website met their expectations well (70 %) or very well (6.7%) which is in line with other results. In summary, Masennusinfo.fi was perceived as a digital service of good quality.

5.4 Usage and perceived quality in different usage groups

The descriptive statistics already showed for what kind of purposes the service is used and that the quality of the service was perceived positively. One of the purposes of this research was to find out if there are any differences in the perceived service quality and usage of the service in different usage groups. Usage groups are managed here according to the background information (sex, age, socio-economic status, education level, visiting regularity and whether the motivation for the visit is personal or happening because of someone else). Differences between groups were examined by comparing two or more means of groups together by either independent t-test or one-way ANOVA. Sometimes researchers are more interested in the differences between groups of people rather than relationships between variables. The simplest method is comparing two means of groups. Independent t-test compares two means and measures their difference. One-way ANOVA compares several means together. Homogeneity of variances was tested with Levene's test as explained earlier (see chapter 4.4). Below, in Table 16, the results of further analysis are presented. Firstly, PCA were executed and components formed and labelled (f1–f8). Then those components were compared between different user groups. Those results are summarized in the table and explained below.

Table 15 Variance analyses

Question 4: Service quality, usability	**Question 5: Service quality, content**
PRINCIPAL COMPONENT ANALYSIS	
1 principal component found f1 usability of the service	2 principal components found: **f2** overall quality of the content **f3** personalised content quality
Independent t-test or one-way ANOVA: comparing the results between different user groups:	
SEX, AGE, SOCIO-ECONOMIC STATUS, EDUCATION LEVEL, VISITING REGULARITY & REASON TO VISIT	
Statistically significant difference found between the means of groups: **NO**	Statistically significant difference found between the means of groups: **YES**
	Education & f3
	(p-value 0.004; personalized content quality)
	Reason to visit & f2; f3
	(p-value=0.021; overall quality & p-value<0.001; personalized quality)
Question 6: Usage, Subject that came for	**Question 9: Usage, Benefits**
PRINCIPAL COMPONENT ANALYSIS	
3 principal components found: **f4** Experiences, **f5** survival **f6** identification & symptoms	2 principal components found: **f7** Emotional benefit **f8** functional benefit
Independent t-test or one-way ANOVA: comparing the results between different user groups:	
SEX, AGE, SOCIO-ECONOMIC STATUS, EDUCATION LEVEL, VISITING REGULARITY & REASON TO VISIT	
Statistically significant difference found between the means of groups: **YES**	Statistically significant difference found between the means of groups: **YES**
Socio-economic status & f5	***Socio-economic status & f7***
(p-value 0.024; survival)	(p-value 0.047; emotional benefit)
	Education & f8
	(p-value 0.003; functional benefit)
	Reason to visit & f7; f8
	(p=0.010; emotional benefit & p=0.015; functional benefit)

Significance level $\alpha = 0.05$

There was no statistically significant difference found between the means of any groups in question four, the usability of the service. This means, that the answers of different user groups were somewhat similar on average. However, in the rest of the questions (questions five, six and nine) some differences occurred.

In question five, regarding the quality of service content, one-way ANOVA was executed for education groups. There was no significant statistical difference between the means of the education groups for the overall content quality (p-value 0.064 (f2)) but difference was found for personalized content quality (p-value 0.004 (f3)) the significance level being $\alpha = 0.05$. Multiple Comparisons' Tukey HSD table showed that statistically significant differences could be found between the groups of

Comprehensive or vocational school and *University or other higher level education* (p=0.015) and between the groups of *High-school / Upper secondary school* and *University or other higher level education* (p=0.049) (α=0.05).

The group of *University or other higher level education* perceived the quality of the personalized content the poorest (mean=3.2027) but the difference to other groups was not significant. Lower educational level groups, *comprehensive or vocational school* and *high-school / upper secondary school*, perceived the quality of personalized content the best (mean=3.9000 and 3.8254). This is in line with previous research since better educated consumers are studied to be more critical and engaged to alternative information search and processing, whereas less educated and poorer consumers base their attitude only on satisfaction (Dennis et al. 2009, 1129−1130). The group of *University or other higher level education* may have not felt the website was targeted to them, or they could not find what they came to look for, even though the overall quality of the content was perceived positive.

One-way ANOVA resulted differences also in the groups of *reason for visiting* the service. Significant statistical difference was found between the means of the groups of *reason for visiting* in both principal components (p-value=0.021 (f2) and p-value<0.001 (f3)) the significance level being α=0.05. However, Multiple Comparisons' Tukey HSD table showed that there was no statistical difference for the overall content quality (f1) but statistically significant differences of the personalized content quality (f3) could be found between the groups of *Because of myself* and *Because of my closed-one* (p=0.007) and between the groups of *Because of myself* and *Because of general interest* (p<0.001). The group of *Because of myself* perceived the quality of the personalized content little bit better (mean=3.9958) than the group of *Because of my closed-one* (mean=3.3750).

In question six, regarding the subject that the user came to look for when visiting the service, differences were found in one user group. Statistically significant difference between the means of *socio-economic groups* was found for survival (p-value 0.024 (f5)) the significance level being α=0.05. Multiple Comparisons' Tukey HSD table showed that statistically significant differences could be found between the groups of *student* and *other* (p=0.023) and groups of *employed* and *other* (p=0.044). However, more detailed analysis was not possible since the categorization of the variables (student, employed, other). The categorized variable *other* could not be divided due to small amount of responses in the variable.

In question nine, concerning the benefit of the service, statistically significant difference between the means of *socio-economic groups* was found in emotional benefit (p-value 0.047 (f7)) but not in functional benefit (p-value 0.348 (f8)). However, no statistically significant differences between the groups were found from the Multiple Comparisons' Tukey HSD table. The smallest p-value was found between the groups of *employed* and *other* (0.109). However, more detailed analysis is not possible since the

categorization of the variables (student, employed, other). The categorized variable *other* cannot be divided due to small amount of responses in the variable.

There was also significant statistical difference found between the means of *education* groups for functional benefit (p-value 0.003 (f8)) the significance level being α=0.05. Multiple Comparisons' Tukey HSD table shows that statistically significant differences can be found between the groups of *Comprehensive or vocational school* and *University or other higher level education* (p=0.036), *High-school / Upper secondary school* and *University or other higher level education* (p=0.48) and groups of *University of Applied Sciences* and *University or other higher level education* (p=0.011). The group of *University or other higher level education* perceived the functional benefit of the website the poorest (mean=3.2324) but the difference to other groups was not significant. The group of *High-school / upper secondary school* perceived the functional benefit the best (mean=3.8600).

Statistically significant difference was also found between the means of the groups of *reason to visit* in both components, emotional benefit (p=0.010 (f7) and functional benefit p=0.015 (f8)) the significance level being α=0.05. Multiple Comparisons' Tukey HSD table shows that statistically significant differences can be found between the groups of *Because of myself* and *Because of general interest* for the both, emotional (p=0.007) and functional (p=0.014) benefits. The group of *Because of general interest* perceived both the emotional and the functional benefit of the website the poorest (mean f7=3.0629 and mean f8=3.3097) but the difference to other groups was not significant. The group of *Because of myself* perceived both the emotional and the functional benefits the best (mean f1=3.6359 and mean f2=3.7897).

To summarize, the respondents were rather consistent with their answers. Overall, Masennusinfo.fi was evaluated as a service of good quality. Both the usability and the content were evaluated high in quality on average. The users of such a service were mostly women, rather young, 16–29 year-olds (42 %) or above middle-age, 50–65 year-olds (23 %), employed or studying, highly educated, and visited the website for the first time. Different user groups were somewhat of the same opinion about the perceived quality. The only differences between users groups were found in *education* and *reason for visiting* groups. People with higher education seemed to perceive especially the quality of the personalized content poorer than lower education groups. They evaluated the service the poorest where as people with lower education background evaluated the quality of personalized content the best. There was also somewhat disagreement between the people who visited the website *because of themselves* and those visiting the website *because of their close-one* or *general interest*. People who visited the website *because of themselves* perceived the quality of personalized content best.

Also the usage of the service was somewhat consistent among the respondents. The service is used for information gathering usually in the early stages of the disease. There

were some differences between the user groups of socio-economic status, education and reason for visiting the service. Survival from the disease and emotional benefit were seen somewhat differently between the socio-economic groups (student, employed and other). The functional benefit in different education groups was also seen differently; the group of *University or other higher level education* perceived the functional benefit of the service the poorest whereas the group of *High-school / upper secondary school* perceived the functional benefit the best. Both emotional and functional benefit were seen differently between the people who visited the website because of themselves and those who visited the service because of general interest. The group of *Because of myself* perceived both the emotional and the functional benefits the best.

6 CONCLUSIONS

The results of the present study indicate that consumers' perceptions on digital service quality are divided into three factors; usability, personalized content and overall content, and consumers' usage purposes were divided into five factors; experiences, survival from the disease, identification and symptoms, emotional benefit and functional benefit. Discussion on the findings is beneficial to reach better overview.

Next, some theoretical contributions and managerial implications are given to conclude the findings of the present study. Also the suggestions for the future studies and limitations of this study are discussed in detail.

6.1 Theoretical contributions

This study has given theoretical contributions. Even though digital services have been researched quite considerably, they have concentrated mainly on consumers' perceptions on e-retailing services (e.g. Parasuraman et al. 2005) instead of content-based services where the matter of exchange is content and information rather than a tangible product (Gummerus 2013, 2–3). Many times, the studies of content-based digital services have contained an interactive attributes (e.g. group discussions, virtual meetings and real-time customer service). The literature has had a tendency of studying digital service evaluations' impact on value, satisfaction and loyalty rather than experiences. This study has given quite a new perspective on a content-based digital service which does not include any interactive features. It has not only contributed to the research of the usage of digital services but also to the digital service quality research.

Quality of a digital service is many times oversimplified. The literature has largely focused on the characteristics of the service by studying the characteristics of websites (e.g. ease-of-use or usefulness) rather than perceptions on the quality of the content or the outcome. Quality of digital services should be covered as a whole, being comprised of the usability (characteristics), content and overall quality (the outcome) of the service. In this study, all of these aspects were considered. As could be seen from the results, both the quality of the usability and content of the service were reviewed positively. However, the results of the content measures showed that the content of the service is perceived relevant but may not be targeted to the user himself. If the study only considered the quality of the usability, this would have not arisen.

As providing digital services in good quality, companies should know what to offer to the users of their services as well. Many companies actually fail to reach the customer expectations probably because they do not even know for which purposes the service is

used. (McKnight & Sechrest 2003; Sandström et al. 2008.). Companies should identify and analyse the consumers' experiences of their services, and purposes for which the services are used, in order to design and offer the best digital services for their users. The research focus should shift from producing a perfect offering to studying how consumers experience the offering, and what a company can do to improve that experience. Also pharmaceutical companies should focus on understanding consumers' experiences and everyday life in order to provide good quality digital services fitting to the needs of the users. (Gummerus 2011, 2–3.) This study, for example, found out in which socio-economic, education background, sex and age groups content-based digital services of pharmaceutical industry are mainly used, and for which purposes they are used.

This study was executed with quantitative measures. The advantage of a quantitative research is to collect much more data from a bigger group of people. It is also rather delicate way of collecting data since it retains the privacy of the respondent. However, qualitative research method would perhaps have given more detailed answers and deeper understanding on the subject. Depression as a therapy area would have been very challenging in qualitative research since it is rather frequent disease, where as in other therapy areas where the group of patients is smaller, qualitative methods would have been easier to conduct. On one hand, patients could have been easier to recruit for the study from smaller group of people, but on the other hand, privacy could have been a challenge to avoid personal identification. Usually depressed people do not want to be recognized since depression is still a taboo in our society, or they do not even recognize the symptoms early enough (Kallionpää 2015). Qualitative study could be done in a therapy area where patients do not mind to be interviewed and performed identifiable.

This study also showed that pop-up surveys are not the most efficient method of collecting data. It results small amount of answers since pop-ups are perceived irritating. In this particular context, the risk of resulting small response rate was taken consciously. The regulations and the matter of subject needed it.

6.2 Managerial implications

The results of this thesis do not only contribute to theoretical research but also give implications to the cooperation company Lundbeck Finland and to the pharmaceutical industry in general. Of course, Lundbeck benefits from the study the most as it gave rather detailed feedback from the users of the service, and any kind of study was done for the first time in Masennusinfo.fi. It is necessary to gain an understanding of customer evaluations and uses of services (Santos 2003, 233). However, any

pharmaceutical or healthcare company can learn from the execution of the survey and draw conclusions from the results of this research.

Even though there were not findings that would need considerable changes to the service, small modifications can have major results. Masennusinfo.fi has approximately 10 000 monthly users so it has potential to become a noticed website, particularly since the word "depression" is googled approximately 12 000 times in each month (Toivonen 2014). However, the bounce rate of Masennusinfo.fi is high, 70 %, which means that 70 % of the visitors do not move forward from the first page but leave the page without interacting with it. This is usually a sign of a badly targeted or organized website (Google Support 2015). The findings of the survey may indicate few reasons of the high bounce rate. Masennusinfo.fi was evaluated a service of good quality both in term of interface and content. Yet, the results showed that the content of the service is perceived relevant but may not be targeted to the user himself. Also, offering bigger variety of features in a digital service increase the visiting time for each use (Bauer et al. 2005). Even though it may not be possible to offer features that require continuous monitoring, e.g. a discussion forum, different kind of content is possible to produce. As the emotional benefit of the website was seen more important than functional benefit, it would be useful to offer services which endorse this feeling. Respondents also wished the website to be updated more often as *News and current topics or new materials related on the subject* was seen the most important developing area. *Articles and interviews from experts* was seen as the second most important area and *Q&A* as the third most important developing area which could both endorse the feeling of support and emotional benefit.

An interesting finding of the present study was that relatively young or middle-aged women are typically using such a content-based digital service. This should be taken into account when designing and developing a service since women have specific preferences when using web-based services. For example, women perceive visual and shorter navigation panes more satisfied. Women are also shopping for fun whereas men tend to be quick shoppers. (Stenstrom et al. 2008; Hansen & Jensen 2009)

Education background has an effect on consumers' online behaviour also. Better educated and wealthier consumers do not necessarily constitute their opinion about a service provider only by their satisfaction level but are engaged to alternative information search and processing whereas less educated and poorer consumers base their attitude only on satisfaction. Satisfaction is seen as an information cue. Younger consumers also do more information search than older people who rely on fewer decision criteria. Older people are more loyal to the services they have found to be good. Consumer traits have an effect on the consumers' attitude towards the service provider which in turn affects the behaviour of the consumer, e.g. the intention to purchase or revisit positively. (Dennis et al. 2009, 1129−1130.)

Recommendation to others and encouraging others to use the service are signs of loyalty intentions. Perceived service quality is then seen so good that it can be told ahead. Positive word-of-mouth and revisitation may occur. (Parasuraman et al. 2005, 217–218.) As the questionnaire resulted relatively high positive answers in the questions of recommendation and revisitation, loyalty in Masennusinfo.fi may increase in the future. Positively perceived service quality may also increase electronic word-of-mouth, eWoM. Consumers today are ready, willing, and able to communicate about their opinions on brands, companies and services with their peers. If well served, people share their knowledge behalf of the company bringing in even more interested visitors. (Hofacker et al 2007, 28.) However, most of the respondents visited the website for the first time. Also the Google Analytics report communicated the same; most of the users of the service do not return to the website after the first visit. If the perceptions on the service were positive, the number might also indicate that the content that the service provides is sufficient enough from the first visit, and there is no reason to return.

6.3 Discussion

As by their name, content-based websites offer lots of content and information in a specialized field of expertise. It is a form of attraction and way of engaging the consumer with relevant, helpful, educational and sometimes entertaining information. (Lieb 2012.) It is also a way of creating proficiency, a way of performing yourself as an expert on the field (Solomon 2013). Since 65-80 % of people search for health information on the internet (Fox 2011; Tilastokeskus, Official Statistics of Finland, Väestön tieto- ja viestintätekniikan käyttö 2013), it is crucial for any healthcare provider to be found online.

Also the frequency of depression keeps growing (Koskinen, Manderbacka & Aromaa 2012, 77–79). In fact, WHO has detected the burden of depression to become major challenge in global healthcare by the year 2020 (WHO 2012). Mental disorders do not only have a huge effect on public health but also extensive impact on the economy (Bäckmand & Lönnqvist 2009, 7). Depression is one of the most common challenges in public health (Isometsä 2007, 157). There are 5 % of Finns (Käypä hoito -suositus 2014) and 20 % of British youth (Office of National Statistics 2014) who experience a period of depression every year. Many will never be diagnosed since they do not know where to search for help or they do not identify the symptoms (Hamburgh 2015; Kallionpää 2015).

Medicines have improved the quality and the length of life. Efficient medical treatment helps to control other healthcare costs as well, e.g. by reducing the time spend in hospitals, and the need for surgeries and long-term care. (PhRMA 2014, v–iv.)

Pharmaceuticals are also claimed to play a big role in enabling people to continue working older. With the growing share of elderly of population, ensuring higher employment rate and longer careers is essential. (Merikallio 2014; Laine 2014, 8–10.) However, development of pharmaceuticals is not sufficient anymore. As Joseph Jimenez, the CEO of a pharmaceutical company Novartis, believes that in the future the pharmaceutical companies are going to be paid on patient outcomes as opposed to selling the pill. (Falconi 2013.)

Developing their digital services even better should be in the interest of any pharmaceutical company. When producing interesting, trustworthy and essential content in the area of depression, Lundbeck not only increases understanding of the disease but also influences the attitudes towards a subject which is seen almost like a taboo. If a depressed person was seen as a patient of a mental disease in the same way as a cancer patient is seen as a victim of a physical illness, not that many people would be afraid of admitting their condition. Treatment in the earlier phase of the disease would be possible. Usually, e-health services are used behalf of someone else, to figure out a condition before seeing a doctor or as a habit. The information found has an impact on how a person takes care of him/herself or someone else. Content-based digital services, like Masennusinfo.fi, ease the life of consumers. Empowerment increases wellbeing. If Lundbeck is seen in the positive light, attitudes towards the company and its medicines are good as well. Providing high quality services strengthen the image of the company and enforce satisfaction, loyalty and attitude of consumers towards the company.

Due to regulations, implementation of digital services and digital marketing of pharmaceuticals is difficult. Even conducting a small survey like this was harder than one could imagine. It was justified that providing successful digital service requires resources and investments which again are scarce in a small business area like Finland. It could be questioned whether it is necessary for an international company like Lundbeck to provide country specific digital services like Masennusinfo.fi. Potential in the Finnish market is, in the end, very small due to our small number of inhabitants.

At the same time, articles related to depression are read around 30 000 times in a month on the most popular Finnish online health library, Terveyskirjasto (Toivonen 2014). Also Masennusinfo.fi has approximately 10 000 monthly visitors. What would happen, if the potential of all of them were realized and the value captured? International companies many times have an objective to provide operations-in-scale, also in digital environments. However, as there is not much time or things to do in customer service when a person visits a digital service, it is essential to provide content that evokes interest. As Lundbeck has operations in Finland anyway, it is important to respond to the needs of its potential customers. Even though Lundbeck is an international company, it is important to offer services in people's mother tongue, especially when concerning sensitive health issues. Studies of other similar digital

services of Lundbeck would be interesting to conduct and compare the results with the present study.

Providing digital health services in pharmaceutical industry is not challenging only due to the regulations but also due to the nature of the subject. Health issues are sensitive in character. Consumers need to be sure that the service is safe to use and that their personal information is protected. Also the severity of health status influences the usage. People with chronic diseases or with poor health status use the e-health services more. Even though digital services usually enable the service provider collect information on their service users, pharmaceutical companies cannot and do not want to do so. Therefore it is also hard to know what kind of information to offer and how is the service perceived.

In the future, pharmaceutical industry should be studied more from the perspective of digital services. Since the regulations influence the delivery of services in digital environments, usual measurements and studies may not apply in this particular context. Also, the measures of content-based digital service quality could be modified to better fit pharmaceutical industry services.

It would be also worthwhile to conduct a comparative study between different digital services in pharmaceutical industry. This study was a descriptive study. The subject was not studied before, and it was conducted in cooperation with Lundbeck Finland. Then, differences between therapy areas and service providers could be compared.

There are number of limitations in this present study. Firstly, the study focused only on a specific digital service in particular and only one content-based website was studied. Comparison between several similar and also different digital services would have resulted more comprehensive research results. As the sample was collected only from one country, Finland, collection of results from various cultures would be worthwhile.

Secondly, the low response rate and small sample size reduced the generalizability of the results. The findings can only be generalized to digital services similar in kind, and to pharmaceutical industry in particular. Therefore, quantitative study with bigger sample is urgently needed.

Thirdly, these findings may not be applicable in healthcare industry as a whole due to specific regulations in the pharmaceutical industry. Even though healthcare services have shared characteristics, e.g. concerning the privacy issues, pharmaceutical industry as a provider of digital services is in harder place than other healthcare providers. Users of e-health services are somewhat similar in each field but the ability to provide services differ greatly.

Fourthly, implementation of the questionnaire was somewhat risky. There occurred technical problems when the link to the questionnaire did not work, and therefore responses during the busiest time of the year were missed. The questionnaire was also

implemented as a pop-up survey which usually conducts low response rates. There was no possibility to give prizes in order to attract respondents because the regulations of pharmaceutical industry forbid actions of that kind.

Finally, the usage and quality of a digital service were studied with the same questionnaire. Both of the subjects would have been important enough to be researched separately. Even though they support each other as concepts, the study could have produced deeper understanding on each of the subjects if studied separately.

7 SUMMARY

The present study was conducted to accomplish a new perspective on consumers' behaviour in digital services in pharmaceutical industry. It desired to increase understanding on the user experiences that are present in digital services offered by pharmaceutical companies. The purpose of this study was to describe consumers' views of a content-based digital service Masennusinfo.fi. The study aimed to find out how consumers perceive the quality of a digital service maintained by a pharmaceutical company and for what purposes do they use the service. Moreover, it figured if the usage and perceived service quality differ across different user groups. Discussing the literature of both the usage and the quality of digital services, the present study has formed a theoretical framework which acknowledges that digital service quality consists of three factors (content, usability and overall quality), and that purposes for digital service usage depend on contextual and personal factors, and are divided to functional and emotional benefits. Special interest was to find out if the characteristics of marketing pharmaceuticals influence the perceptions on quality or usage.

To test the framework, the empirical part of the study was handled with a web-based survey. The survey questionnaire was based on the theoretical part, and the measures were analysed in terms of their reliability. The results were analysed with descriptive and multivariate analysis; principal component analysis to reduce the amount of information and combine variables of similar behaviour together, and variance analysis to observe if there were differences across different user groups. There extracted altogether eight different components.

The findings of the present study are mostly in accordance with the previous research. Masennusinfo.fi was evaluated as a service of good quality. Both the usability and the content were evaluated high in quality on average. The users of such a service were mostly women, rather young, 16–29 year-olds, or above middle-age, 50–65 year-olds, employed or studying, highly educated, and visited the website for the first time. Different user groups were somewhat of the same opinion about the perceived quality. The only differences between users groups were found in the groups of education background and reason for the visit. People with higher education seemed to perceive especially the quality of the personalized content poorer than lower education groups. They evaluated the service the poorest where as people with lower education background evaluated the quality of personalized content the best. There was also somewhat disagreement between the people who visited the service because of themselves and those visiting the website because of their close-one or general interest. People who visited the website because of themselves perceived the quality of personalized content best.

Also the usage of the service was perceived somewhat consistently among the respondents. The service is used for information gathering usually in the early stages of the disease. There were some differences between the user groups of socio-economic status, education and reason for visiting the service. Survival from the disease and emotional benefit were seen somewhat differently between the socio-economic groups (student, employed and other). The functional benefit in different education groups was also seen differently; more highly educated people perceived the functional benefit of the service the poorer than less educated people. People who visited the service because of themselves perceived both the functional and emotional benefits of the service better than those of general interest or someone else.

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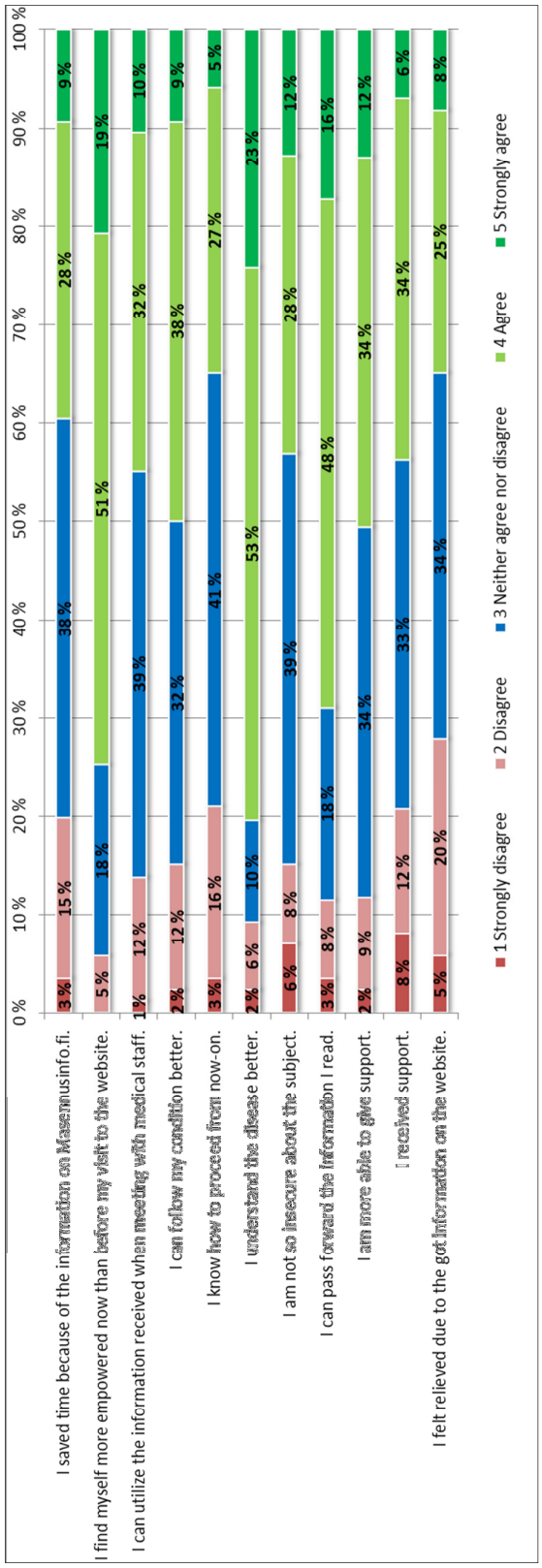
APPENDIX 1: GRAPH



APPENDIX 2: THE SURVEY QUESTIONNAIRE

Turun yliopisto
University of Turku

1. Valitse seuraavista:

- Tutustuin sivustoon nyt ensimmäistä kertaa.
- Olen käynyt sivustolla aikaisemminkin.
- Käytän sivustoa säännöllisesti

2. Mikä seuraavista kuvaa parhaiten syytäsi vierailla tällä sivustolla?

Valitse

- Epäilen sairautta.
- Haluan lisätietoa aiheesta.
- Haluan helpotusta omaan olooni.
- Haluan saada lisätietoja eri hoitomuodoista.
- Haluan saada vahvistusta lääkärissä käynnin jälkeen.
- Sairaus on todettu / diagnosoitu.
- Jokin muu syy

3. Kuinka hyvin sivusto vastasi odotuksiasi?"

	1 Erittäin huonosti	2 Huonosti	3 Ei hyvin eikä huonosti	4 Hyvin	5 Erittäin hyvin
Valitse	○	○	○	○	○

4. Arvioi sivuston käytettävyyttä seuraavien väittämien avulla

	täysin eri mieltä	jokseenkin eri mieltä	ei samaa eikä eri mieltä	jokseenkin samaa mieltä	täysin samaa mieltä
Sivustolta on helppo löytää tarvitsemani informaatio.	○	○	○	○	○
Sivusto on jäsennelty luonteviin osioihin.	○	○	○	○	○
Sivustolla on helppoa selailla edestakaisin.	○	○	○	○	○
Olen tyytyväinen sivuston rakenteeseen.	○	○	○	○	○
Olen tyytyväinen sivuston ulkoasuun.	○	○	○	○	○

5. Arvioi sivuston sisältöä seuraavien väittämien avulla

	täysin eri mieltä	jokseenkin eri mieltä	ei samaa eikä eri mieltä	jokseenkin samaa mieltä	täysin samaa mieltä
Mielestäni sivuston sisältö on informatiivista.	○	○	○	○	○
Sisältö on ajankohtaista.	○	○	○	○	○
Sisältö on olennaista.	○	○	○	○	○
Mielestäni sivuston sisältö on mielenkiintoista.	○	○	○	○	○
Sivuston tieto on luotettavaa.	○	○	○	○	○
Löysin sivustolta etsimäni.	○	○	○	○	○
Minulle on ollut hyötyä sivustolta saamastani tiedosta.	○	○	○	○	○
Mielestäni sivusto on minulle suunnattu.	○	○	○	○	○
Olen tyytyväinen sivuston sisältöön	○	○	○	○	○

6. Mistä aihealueesta etsit tietoa tullessasi sivustolle? Valitse seuraavista vaihtoehdoista viisi (5) sinulle tärkeintä aihetta niin, että tärkein aihealue saa arvon 1 ja viidenneksi tärkein arvon 5

Masennuksen tunnistaminen: olenko / onko toinen masentunut	1 Tärkein 2 3 4 5
Masennus sairautena: lääketieteellinen selitys	
Masennus sairautena: mikä siihen johti/ voi johtaa?	
Masennus sairautena: kuinka se etenee?	
Masennuksen oireet: mitkä ovat merkkejä masennuksesta	
Masennuksen hoito: kuinka masennusta hoidetaan?	
Masennuksen hoito: terapia hoitomuotona	
Masennuksen hoito: lääkkeet hoitomuotona	
Masennuksesta selviytyminen: miten selvitä siitä?	
Masennuksesta selviytyminen: kuinka hakeutua hoitoon?	
Muiden sairastuneiden kokemukset ja tarinat	
Hoitohenkilökunnan kokemukset ja tarinat	
Omaisten kokemukset ja tarinat	

7. Sivusto on jaettu kuuteen eri osioon, miten arvioisit sivuston osioita niiden hyödyllisyyden suhteen?

	ei lainkaan hyödyllinen	ei juurikaan hyödyllinen	ei samaa eikä eri mieltä	melko hyödyllinen	erittäin hyödyllinen
Masennus	○	○	○	○	○
Oireet	○	○	○	○	○
Hoito	○	○	○	○	○
Selviytyminen arjesta; potilastarinat ja kokemukset	○	○	○	○	○
Ajankohtaista; kognitiivinen toimintakyky	○	○	○	○	○
Ahdistuneisuushäiriöt	○	○	○	○	○

8. Missä määrin seuraavat väitteet kuvaavat sivustoa?

	täysin eri mieltä	jokseenkin eri mieltä	ei samaa eikä eri mieltä	jokseenkin samaa mieltä	täysin samaa mieltä
Masennusinfo.fi on laadukas palvelu.	○	○	○	○	○
Arvostan Masennusinfo.fi sivustoa.	○	○	○	○	○
Masennusinfo.fi sivustolla viettämäni aika on mielestäni hyvin käytettyä aikaa.	○	○	○	○	○

9. Missä määrin seuraavat väitteet kuvaavat saamaasi hyötyä sivustosta?

	täysin eri mieltä	jokseenkin eri mieltä	ei samaa eikä eri mieltä	jokseenkin samaa mieltä	täysin samaa mieltä
Säästin aikaa Masennusinfo.fi:n tarjoaman informaation ansiosta.	○	○	○	○	○
Koen olevani tietoisempi / valaistuneempi asian suhteen nyt, kuin ennen sivustolla käyntiä.	○	○	○	○	○
Voin hyödyntää saamaani informaatiota tavatessani hoitohenkilökuntaa.	○	○	○	○	○
Pystyn paremmin seuraamaan terveydentilaani.	○	○	○	○	○
Tiedän, kuinka toimia tästä eteenpäin.	○	○	○	○	○
Ymmärrän sairautta paremmin.	○	○	○	○	○
En ole enää niin epävarma asian suhteen.	○	○	○	○	○
Voin kertoa lukemaani informaatiota eteenpäin.	○	○	○	○	○
Pystyn olemaan paremmin tukena.	○	○	○	○	○
Sain tukea tilanteeseeni.	○	○	○	○	○
Tunsin oloni huojentuneeksi sivustolta saamani informaation vuoksi.	○	○	○	○	○

10. Kuinka todennäköisesti käytät sivustoa uudestaan?

	1 Erittäin epätodennäköistä	2 Jokseenkin epätodennäköistä	3 En osaa sanoa	4 Jokseenkin todennäköistä	5 Erittäin todennäköistä
Valitse	○	○	○	○	○

11. Kuinka todennäköisesti suosittelisit sivustoa?

	1 Erittäin epätodennäköistä	2 Jokseenkin epätodennäköistä	3 En osaa sanoa	4 Jokseenkin todennäköistä	5 Erittäin todennäköistä
Valitse	○	○	○	○	○

12. Kuinka sivustoa tulisi mielestäsi kehittää? Laita seuraavat asiat tärkeysjärjestykseen niin, että tärkein kehityskohde saa arvon 1 ja vähiten tärkein arvon 7. Huom! Voit antaa kunkin arvon vain yhdelle parannuskohteelle.

Monipuolisempi sisältö	
Selkokielisempi sisältö	
Helppokäyttöisempi sivusto	
Aiheeseen liittyviä uutisia ja uutta materiaalia	
Asiantuntija- artikkelit ja -haastattelut	
Potilaiden kokemuksia ja tarinoita enemmän	
Kysymyksiä ja vastauksia -palsta	

1 Tärkein
2
3
4
5
6
7 vähiten tärkein

13. Vierailin sivustolla

Valitse tästä

oman itseni takia
läheiseni takia
asiakkaani / potilaani takia
yleisen kiinnostuksen takia

14. Sukupuoli

Valitse tästä

mies
nainen