

*Evaluating the Effectiveness of Trust  
Signals in the eHealth Sector:  
A Multi-Stakeholder Approach*

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This dissertation is submitted for the degree of  
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# Declaration of Originality

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This dissertation is the result of my own work and includes nothing which is the outcome of work done in collaboration except as declared in the Preface and specified in the text.

It is not substantially the same as any that I have submitted, or, is being concurrently submitted for a degree or diploma or other qualification at the University of Cambridge or any other University or similar institution except as declared in the Preface and specified in the text. I further state that no substantial part of my dissertation has already been submitted, or, is being concurrently submitted for any such degree, diploma or other qualification at the University of Cambridge or any other University or similar institution except as declared in the Preface and specified in the text

It does not exceed the prescribed word limit for the relevant Degree Committee.



# Abstract

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## **Evaluating the Effectiveness of Trust Signals in the eHealth Sector: A Multi-Stakeholder Approach**

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The Internet gives patients the opportunity to be better informed, have ownership over their data, and, therefore, be empowered in the medical decision-making process. All of these new forms of patient empowerment through eHealth, however, require the patients' trust in online service. Existing literature provides a solid foundation regarding the development of trust in social encounters. What is more, the understanding of trust related to more general online services, such as e-commerce is advanced, too. Regarding eHealth in particular, however, there are substantial gaps in the literature. What is more, all existing studies have one pitfall in common. None of them investigates trust as a reciprocal, evolving system that is based on recurring interactions between trustee and truster. Studies either focus on the individual view of the trustee or the truster but fail to analyse the potential dynamics of a trust signal and its evolution.

This led me to research questions that aim to identify trust-evoking factors specific to eHealth, on the one hand, and develop an understanding of the evolution and sustainability of communication between trustee and truster. I applied a mixed-methods approach in order to answer my research questions. This allowed me to use qualitative methods to explore a variety of trust antecedents that are unique to eHealth, develop hypotheses, and then test the derived hypotheses through a quantitative study. One surprising insight of this study is that the risk perception of the overall service offer can determine the level of trust in a service even before entering the website. Risk perception proved to be a more crucial indicator of perceived trustworthiness than presence of trust signals on the website. This allows the conclusion that both researchers and policy makers should differentiate between high-risk and low-risk eHealth services instead of approaching all services under the unifying umbrella of eHealth. Another key finding is that users judge the trustworthiness of eHealth websites depending on their "fit". For eHealth providers that means that in order to increase trust in their service they need to mimic the offline experience as much as possible.



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# Introduction

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## **Background – Why Study eHealth?**

Fast-paced advances in technology are indisputably disrupting previously known boundaries of healthcare. Ranging from online information services to personalised mobile apps, from medical second opinions to online support groups – there seems to be no limit to what researchers and technology companies can develop.

In the following paragraphs, I would like to present a number of eHealth solutions that have the potential to influence the problems of today's healthcare systems in a positive way. EHealth has been defined as “the use of emerging interactive technologies (e.g., Internet, CD-ROMs, personal digital assistants, interactive television and voice response systems, computer kiosks, and mobile computing) to enable health improvement and health care services” (Ahern, Kreslake, & Phalen, 2006, p.2).

Ehealth in general refers to both patient and healthcare provider facing solutions. Both the circumstances and the context of usage differ greatly in these two use cases. Healthcare providers use eHealth services in the professional context at their workplace, whereas patients make use of these services in their private capacity and especially in moments of ill health. Therefore, it would not be sensible to summarise patient and provider facing solutions in one study. Throughout this thesis, I will elaborate primarily on eHealth solutions targeted at patients as opposed to healthcare provider facing applications. What is more, I will focus on browser-based tools and applications as opposed to mobile applications.

What are the benefits that patients / users gain from the usage of eHealth applications? One key factor appears to be information. Chiou and Chung (2012) put forward the hypothesis that more information can enable patients to better observe their own health and to distinguish between symptoms, which then, in turn, enables them to give their doctor hints toward the right diagnosis. What is more, the authors highlight that it is beneficial if patients are informed throughout the entire process of their disease because only in this way the evaluation and choice of the optimal treatment can be granted, and post-decision conflicts and regret can be avoided. According to Ahern and colleagues (2006) the self-esteem that

develops through a better level of information can be crucial to trigger a change in the relationship between physicians and patients. As a result, patients can be more empowered and less intimidated by the rank of the physician. Ahern and colleagues (2006) even speak of patients' chance of becoming a fully integrated member of their care team. On top of the change in the doctor-patient relationship, it has been found that patients who have a better understanding of their disease and treatment plan worry less and recover more easily than those who are less well informed (Fallowfield, 2008). Patients apparently also adhere better to their treatment plans if they have a deeper understanding of the plan and the disease itself (Sepucha & Mulley, 2009).

But the opportunities for change through eHealth are much greater than the mere provision of medical information. The internet provides also the option to revolutionise how patients and doctors communicate. Andreassen and colleagues (2006) for example analysed emerging usage patterns of an e-mediated communication tool for doctors and patients. Their findings suggested that this novel technology not only stimulated a more personal language, but they also lowered the threshold to get in touch with the physician. As a result, patients' trust in their doctors was increased. Furthermore, e-mediated communication enabled patients to take more time to reflect on their symptoms and to describe them in tranquillity. Therefore, Andreassen and colleagues (2006) concluded that e-mediated communication technologies have the potential to improve doctor-patient communication.

Yet another potential benefit of eHealth is that it allows for the formation of entirely novel, health-related communities. These communities can include different groups of people. A common type of group is patient-support groups (either led by a professional health organisation or self-organised), but discussion groups for physicians amongst themselves do also exist. These groups can be either on a local, national or even global scale. One commonly used platform are forums, which can be classified as interpersonal or mass communication (Sillence, Briggs, Harris, & Fishwick, 2006). One of the most insightful and promising studies in this field has been conducted by Radin (2006). She found that online support groups could be cohesive communities that provide both the emotional intelligence and pragmatic information that is needed to cope better with a disease. Groups helped patients to identify relevant professional papers, inspiring books, and news articles as well as giving patients a space to discuss their worries. Since all shared information is archived, support groups also provide insights for later seekers of information. A particularly

interesting finding is that these support groups tended to lead to concerted action. This may be due to shared concerns about deficiencies of healthcare institutions. In the sum, Radin (2006) classified online support groups as an empowering tool for patients to deal with their disease, to improve medical literacy, and to overcome inefficiencies related to offline healthcare.

Apart from information exchange and online communities, there are browser and mobile-based applications that allow patients to self-diagnose diseases and to manage chronic health conditions. Examples for diagnosis applications would be an ophthalmology software solution that provides colour-blindness tests (Stanzel & Meyer, 2012) or the “Symptom Checker” tool which is provided on the website of the UK NHS. Diabetes management applications are an excellent example of disease management software. These apps help the patients to keep track of their blood sugar levels and their food and medication intake (Goyal & Cafazzo, 2013). In a recent study, Bierbrier and colleagues (2014) have analysed the accuracy of eHealth application and they have come to the conclusion that the majority of tested applications made accurate medical calculations. One major benefit of self-diagnosis and disease management tools is that they reduce dependencies on medical experts and enable patients to conduct certain measurements, such as blood sugar levels, in context of their everyday lifestyle (Goyal & Cafazzo, 2013).

The above examples perfectly illustrate the immense potential of eHealth applications to benefit patients. They may not only improve medical literacy but also empower patients in various ways. Paternalistic relationship models can be reduced and threatening institutional incentive systems can be bypassed. It is, therefore, not surprising that eHealth usage has reached a tremendous scope. Andreassen and colleagues (2007) found that 71 per cent of internet users in a sample of seven countries in Europe have already used the internet for health-related purposes.

## Research Focus

### Human Computer Interaction as an “Evolving Relationship”

All of the mentioned potential benefits of eHealth solutions depend on one crucial factor though. EHealth technologies need to be accepted by patients and other potential users, otherwise their potential remains nothing but sheer potential. How can we conceptualise users’ uptake of technology and understand which factors influence whether or not they will use a given technology? This is an ongoing area of focus in the field of Human Computer Interaction (HCI).

HCI researchers Venkatesh and Davis (2000) are well known for their work in the field of users’ acceptance of technology. Their most widely cited work is the Technology Acceptance Model (TAM), which is a technology-centred extension of the Theory of Planned Behaviour by Ajzen (1991). The model highlights that a variety of factors need to be met for a new technology to be adopted by users: The external variables of *perceived usefulness* and *ease of use*, the *user’s attitude towards the usage*, as well as the *behavioural intention to use*.

The overall aim of this research project is to develop a deeper understanding of the factors that impact on users’ reasoning in relation to eHealth. As it becomes clear from the TAM, both factors that concern the design and function of the service as well as factors that concern the user him/herself play a crucial role. The perspective from which I will be looking at the issue is to go even beyond the TAM in the sense that this dissertation is viewing the relationship between user and service as an evolving relationship, not a fixed constant.

What exactly is meant by “evolving relationship”? The TAM mentions *perceived usefulness*, *perceived ease of use*, and the *user’s attitude towards the usage* as if the technology was immutable and a stable “object”. What I will argue in this thesis is that in the case of online technologies, this is an outdated view. Designers, programmers, and marketers are as much observant of the users’ behaviour as the user is observant of the technology itself and the brand behind it. Both parties adjust their judgements depending on the actions of the other. That means any ehealth service is not a fixed object, but an interface between user and a group of humans on the other side (the designers, programmers marketers, etc.).



Going back to the TAM, the two variables *perceived ease of use* and *perceived usefulness* will be adjusted by the eHealth service provider depending on the users' reactions to the service. That means that if the uptake of a service is low, the service provider will likely conduct user research to improve these aspects. And the users' *attitude towards the service* and *intention to use* will be updated depending on the adjustments of the service provider.

To give a concrete example: A user may not use a medical online library due to messy structure of the webpage. The provider is able to learn about this shortcoming through user studies and can improve the structure, which then in turn makes the user want to use the service. In other words, web design in general and in the eHealth sector in particular can be viewed as an ongoing interaction and evolving relationship between service provider and user.

### **Focus on Trust**

The question is how one can best study this relationship between the service providers and the users and which variables are most impactful. A key component that moderates users' *intention to use* is whether or not they trust in the service (Harrison McKnight, Choudhury, & Kacmar, 2002). Trust is so to say the invisible lubricant that enables humans' interactions, no matter if it is offline or mediated by websites and online services. What is more, trust is a useful variable with regards to studying the bi-directional relationship between users and service providers, because it highlights the human(e) component of ehealth. After all, we are looking at a human-to-human interaction, with the specification that the online technology provides an interface that bridges time and space and makes face-to-face interaction redundant.

So far, I have spoken of the eHealth service as if it was a black box between service provider and users, which is obviously not the case. In fact, the eHealth service offer itself, its design, and all accompanying features are what mediates the trust between user and provider. That means the service provider, or trustee, uses the website to signal their trustworthiness. These signals are being interpreted by the users, or trusters, and depending on their reaction, they will be adjusted by the trustee in the next round of interaction.

Put differently, we are looking at recurring sequences of trust signalling between service providers and users. And this evolution of signals that are being displayed on ehealth websites as a means to communicate trustworthiness of ehealth service providers to potential users of these services is exactly the subject of this dissertation. The broader purpose is to draw conclusions about users' uptake of ehealth services, but this question will be specifically analysed through the lens of web-based technology as an interface between humans, with all the complexities that human interactions have, signalling one's trustworthiness being one of the most important.

In any relationship, trust is not only a "nice to have", but it is a major facilitator of interactions (Shapiro, 1987). In relation to healthcare, trust is not an online specific issue. Also in the offline world, patients' trust in their physician has been said to be most helpful for shared decision making, better compliance with treatment plans, and patients' satisfaction with their treatment (Shepherd, Tattersall, & Butow, 2008). The digital world brings entirely new challenges to the establishing of trust between the patient and their doctor. As traditional trust evoking mechanisms such as spontaneous body reactions (e.g. eye contact – see literature review chapter for further explanation) (Waciewicz & Zywczyński, 2012) do not exist online, trust has to be built by using novel, innovative approaches.

The potential to solve current healthcare problems using online healthcare services and the fundamental importance of trust when using such services have inspired the work on this Ph.D. project. This section should have given the reader a thorough understanding of patients' perspective on healthcare and their major needs and concerns. In addition, it has been explained why social factors, especially trust, may be decisive factors when it comes to the success of online healthcare services.

### **Germany - Institutional and Cultural Context**

This dissertation is specifically analysing trust in relation to eHealth in the case of German eHealth services. This decision was made because of the current lack of research on the topic in the German context. The vast majority of studies in this field have been conducted in the United States of America. There are several reasons why results of studies conducted in the United States may not be applicable in the German context. First of all, there are profound cultural differences between the United States and Germany. Secondly, the insurance system

is set up very differently. Lastly, Germany has a very specific financial reward structure with regards to surgeries which makes the impact of eHealth services especially meaningful.

### Cultural Dimension

One recognised approach to study intercultural differences is by using the cultural dimensions that have been developed by Geert Hofstede (e.g. Hofstede & Minkov, 2010). According to Hofstede, cultural predispositions can be clustered according to six main dimensions: *power distance*, *individualism*, *masculinity*, *uncertainty avoidance*, *long-term orientation*, and *indulgence* (indulgence has been added to the dimensions after publication of the original research). As can be seen in the graph, Germany and the United States differ especially with regards to long-term orientation (“Hofstede Insights,” 2020). Long-term orientation obviously plays a major role when it comes to one’s health preferences because a lot of health-related decisions depend on future considerations. That means American people’s orientation towards healthcare is likely to differ from that of German people. In other words, a study of the German context is needed.

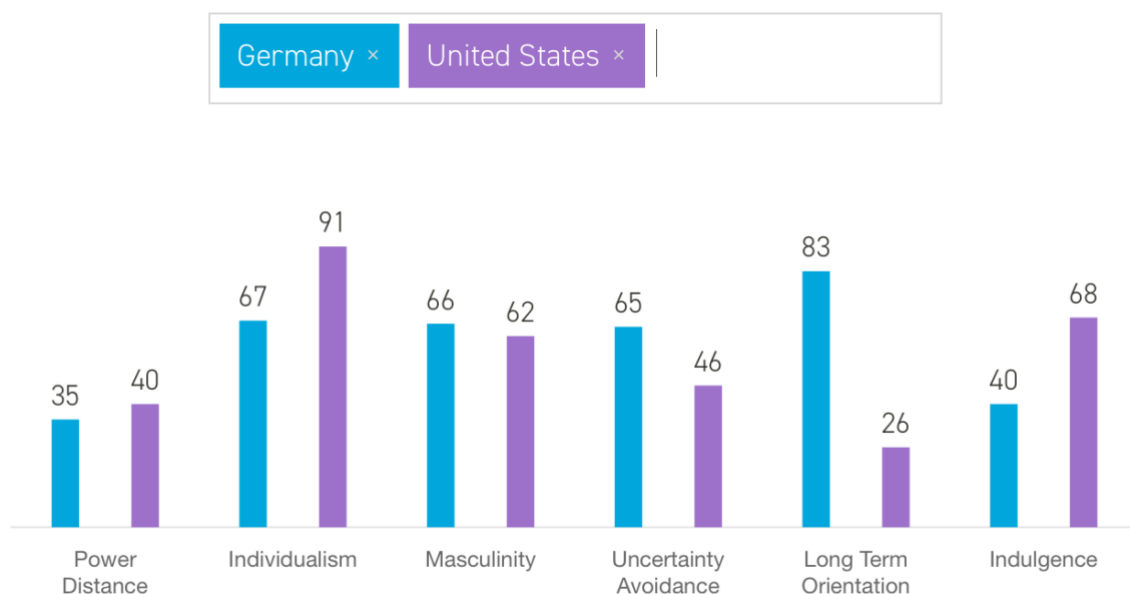


Fig. 1: Comparison of German and American Cultural Dimensions based on “Hofstede Insights” (2020)

## Insurance System

In Germany, the vast majority of people are insured by public health insurance, which covers all necessary healthcare services. What is more, patients never get to see any medical bills because the payment is done directly by the insurer (“Krankenversicherung in Deutschland,” 2018). Whilst Germany is not the only country in which this is the case, especially the United States have a very different approach to health insurances, where the coverage of insurances is much less regulated, and many health insurance plans only cover a limited amount of services (“Health insurance in the United States,” 2020). This means the awareness about the cost of healthcare is very different in the United States, which indirectly may have an impact on the perception of eHealth services which in most cases have to be paid for by the patient.

## Consequences of Financial Reward Structure in the German Healthcare Sector

Another factor in which healthcare systems differ across the world is the financial remuneration system attached to them. The financial remuneration indirectly sets incentives for a certain modus operandi of the respective healthcare system. German hospitals, for example, are obliged to charge fixed case-based lump sums for all inpatient services. These can be seen as alternatives to time-based or service-based compensation schemes. The compensation per case is based on the expected costs of the treatment of a specific disease, taking into account the age, sex and secondary diagnoses of the individual patient (N/A, 2000). The drawback of this compensation scheme, however, is that it also incentivises an increase in overall case numbers and the preference for uncomplicated cases (Damm, Scheunemann, Vauth, & von der Schulenburg, 2009). In other words, a surgery leads to larger revenue than an alternative treatment and performing a surgery on a 30-year old who will soon recover and leave the hospital leads to a larger profit margin than performing the same surgery on a 70-year old who will need longer to recover and is more likely to suffer from complications. The system therefore shifts the focus from treatment optimisation to turnover optimisation.

This configuration of the remuneration system is unique to Germany and may lead to unethical incentive structures that tempt surgeons and clinic management to increase operation rates without actual necessity (Birkmeyer, Finlayson, & Birkmeyer, 2001).

In the bottom line, the financial reward system in German hospitals makes the study of eHealth in Germany especially beneficial, because eHealth services have the potential to educate patients to take better health-related decisions and reduce the number of unnecessary surgeries. That means findings of this thesis may lead to an improvement of eHealth service provision and may have an indirect effect on surgery decisions of patients' and, therefore, bring about an applied social benefit.

## **Dissertation Outline**

In the following section, I would like to outline the chapters of this dissertation. The most common structure of a dissertation in the field of social psychology is to go by the chapters Introduction, Literature Review, Methodology, Analysis, Discussion, and Conclusion. The dissertation at hand differs from this standard outline because the empirical work was divided into two consecutive parts that build on each other. The first empirical part draws on qualitative methods to explore the subject and generate more refined hypotheses. The second empirical part employs a quantitative online experiment to test research hypothesis that are partly based on the literature and partly based on findings from the exploratory studies. That means the structure of the thesis follows following chapters: Introduction, Literature Review, Methodology – Overview and Exploratory Studies, Analysis of Exploratory Studies, Methodology – Confirmatory Studies, Analysis of Confirmatory Studies, Discussion, and Conclusion.

In the literature review chapter, the reader will be provided with an overview of the literature that already exists in this domain. I will present conceptualisations of trust from different domains such as social psychology and sociology in order to provide a solid base to approach the topic. Furthermore, I will elaborate on findings related to trust in the domain of Human-Computer Interaction and highlight gaps in the literature, especially regarding eHealth in particular. Lastly, I will introduce the theoretical framework that I am applying to guide my empirical work and the analysis. It is based on signalling theory, which originally stems from evolutionary biology but has been applied by social scientists in the realms of communication, economics, and marketing. It enables a better understanding of the reliability of signals that senders use to communicate certain qualities to receivers. In the

case of this dissertation, it serves as a tool to analyse online signals that companies use to signal trustworthiness of their services to users and how users respond to these signals.

Thereafter, in the first methodology chapter, the reader is presented with a general introduction to this dissertation's methodology including a positioning with regards to epistemology and ontology. What is more, the two exploratory studies and the related research procedures are being outlined in detail. One of these exploratory studies is a contextual inquiry that provides in-depth insights into the perspective of users of medical websites. The second study is a series of expert interviews that provide the opposite perspective of the services in question. This approach is especially beneficial with regards to signalling theory, which aims at a bi-directional analysis of signalling in the eHealth sector.

In the analysis chapter, the results of both exploratory studies are being presented. Both studies were analysed through the lens of thematic coding, an approach to data analysis that has been outlined by Attride-Stirling (2001). The results of these studies shed light on most of the main research questions and supported the development of sub-questions and hypothesis that were then examined through a confirmatory, quantitative online experiment. The study design of this study is presented in the subsequent chapter which is called "Methodology – Confirmatory Study". The results of the confirmatory study are stated in the second analysis section of this dissertation.

Thereafter, the results of all three studies are being discussed in a synthesised way in the Discussion chapter. Each research question is given individual attention and findings from the academic literature in the field is used to further advance the meaning making in relation to the results of the studies.

The last chapter, the Conclusion, highlights the contributions of this dissertation to the academic field, policy makers, and practitioners. Lastly, limitations of the dissertation are put forward.

## **Contribution and Value of the Research**

This dissertation is making a number of contributions. First of all, it is the first study of its kind to address specifically the German eHealth sector. Secondly, the predominant approach to study trust in relation to online services is to focus on a momentary snapshot. I am arguing, however, that the relationship between user and service is evolving over time. I put forward the perspective that the online service is essentially an interface between the user as a human being and the programmers on the other side, which are also human beings. Like in any human-to-human interaction, the communication strategy of each party develops over time. In the case of eHealth services that means that the service provider will continuously adjust the trust signals that (s)he uses on the web interface. In order to provide a theoretical backbone for this process, I am suggesting a theory called Signalling Theory that is originally from the realm of Evolutionary Biology. This theory has not been used in the context of Human Computer Interaction up to this point. Lastly, this dissertation is shedding light on the relationship between risk perception and trust in relation to health, which generates a deeper understanding of the various variables involved in the interaction between user and website.

# Literature Review

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This literature review is providing information on the various concepts that are related to the purpose of this study, namely, to shed light on trust in relation to eHealth. The literature review starts with a presentation of research on trust and related concepts. I then turn to the origins and effects of trust. All of this provides the reader with thorough understanding of trust as a general concept. Thereafter, trust in the online world is being explained, with specific attention to eHealth. I then introduce signalling theory, which serves as the theoretical backbone of this thesis. Lastly, the research questions are being derived from the various insights and research gaps presented throughout the literature review.

## Definition of Trust

A famous notion related to the importance of trust is the following quote by Uslaner (2002, p.1): “Trust is the chicken soup of social life. It brings us all sorts of good things - from a willingness to get involved in our communities to higher rates of economic growth, to making daily life more pleasant. Yet, like chicken soup, it appears to work somewhat mysteriously”. This phrase, albeit its humorous nature, captures several key characteristics of trust. In the social context, trust can be seen as a lubricant that eases interpersonal relationships (Gambetta, 2000). Regarding the economy, trust can be seen as a key element to complexity reduction and agent relationships. But, as Uslaner points out, the concept of trust remains somewhat mysterious. There is neither a universally accepted definition of the term, nor is there a standardised approach to measure it (Blomqvist, 1997).

In the following chapter, I would like to shed light on the different definitions of trust, its functions, its prerequisites, and ways to conceptualise it. This chapter is concerned with trust in general. The connection between trust, the online world, and healthcare services will be drawn in the following chapters.



## **Lack of Definition**

Although trust is a term which is widely used in everyday life, there is no standard definition of the term and its meaning can differ according to the situation it is used in. The same applies to the usage of the term trust in academia: although there is a vast amount of research on trust, it varies across fields what exactly scholars define as trust.

## **Behaviour, Psychological State or Both?**

Interestingly, various streams of literature conceptualise trust in ways that are distinctly different. Some authors see trust as a behaviour, which means that it is always linked to the act of “entrusting” whereas other authors think of trust as a psychological state, similar to an attitude.

As far as philosophy and sociology are concerned, trust is generally not seen as behaviour, but as a psychological state that moderates behaviour. Accordingly, trust is an underlying assumption that leads to an action; it is not an action itself. Jones (1996) for example defines trust as an optimistic attitude about the goodwill and the ability of the other to fulfil one’s expectations. This definition captures both affective emotions in trust relationships amongst friends and competency-based trust relationships in business.

In contrast to this rather passive, attitude-focussed view on trust, economists measure trust in terms of cooperation. A person is said to trust another person if he or she actively engages in an economic exchange. Trust is said to be a calculative evaluation of other parties’ actions and the resulting action of collaboration (Williamson, 1993).

The question is, however, whether this binary understanding is doing justice to the complex notion of trust. It may be more reasonable to accept that trust is not one or the other, but similar to for example “love” a concept that entails visible actions (in the form of entrusting and commitments) as well as an emotional and less visible underpinning.

## **Rationality**

Whether trust is an attitude or a behaviour resembles yet another question. It is also not clear to what extent trust is influenced by rational reasoning as compared to emotional impulse. Researchers speak about cognitive trust when it is mainly influenced by rational thinking. Cognitive trust is the act of discriminating amongst entities that are trustworthy, distrusted,

and unknown (Lewis & Weigert, 1985). In this view, trust equals a cognitive, logical decision about whom to trust. This is not to be confused with the view of trust as a behaviour though. Even a sharp, rational decision about trust may not lead to an action. Cognitive trust may as well be a mere disposition to behave in a certain way (Becker, 1996).

In contrast to this account, researchers use the terms non-cognitive or affective trust when trust is a matter of trustful attitudes, affects, emotions, and motivations that are not based on clear evidence about specific people or groups. An extreme example of non-cognitive trust would be the attachment that abused children or adults develop to their oppressors (Becker, 1996). Having said that, it does not automatically mean that non-cognitive trust is *arbitrary*. Its main feature is that its origin lies not in a rational conclusion. Non-cognitive trust may appear dangerous, but it is necessary because people are simply not able to rationally evaluate every single risky situation they may face (Lewis & Weigert, 1985).

## **Risk**

As it may have become clear in the previous paragraphs already, trust is needed in situations that are risky for the truster. In social situations, this risk is mainly due to the unreliability of guarantees. According to O'Neill (2002), trust is required because guarantees can never be a waterproof prediction of other people's behaviour. Therefore, trusters are left with incomplete predictions about other people's behaviours, competency, and intentions. This conclusion has also been confirmed by Lewis & Weigert (1985). They assume that "trust begins where prediction ends" (p. 976). The complex relation between trust and prediction can be illustrated by the prisoner's dilemma. In the prisoner's dilemma, the prisoners would be best off if both of them remained silent. If, however, one of them confesses and the other does not, the person who confesses would be much better off than the prisoner who remains silent. Therefore, prisoners can either trust the other prisoner to refuse to give evidence as well or assume that he will defect to be on the safe side. It has been argued by (Tullock, 1967) that the prisoner's dilemma does not demonstrate a trust situation because the prisoners cannot predict the other's behaviour. But this interpretation ignores that it is exactly this insecurity about the other prisoner's behaviour that makes up a trust affording situation. If the prisoners remain silent, they do so although they put themselves on the line and that is exactly the crucial element for trust (Held, 1968).

One aspect that cannot be illustrated by the prisoner's game, however, is the emotional nature of trust. The imperfection of guarantees may be the context of a situation that requires trust, but the decision whether we place trust is guided by a variety of complex factors. In most everyday situations, the person we need to trust is not a neutral stranger. Lewis and Weigert, (1985) criticise these cognition-based conceptions of trust because they limit it to a conscious, over-rationalised state that is evident due to people's cooperation. In conclusion, the decision to trust somebody is inherently related to risk due to a lack of security and imperfect guarantees. The prisoner's game is a good conceptual framework to illustrate how risk is the precondition that leads to the necessity of trust, but it does not serve to illustrate the complexity of real-world trust decisions.

Shapiro's (1987) study of principle and agent relationships is also focussed on highlighting risk in interpersonal collaborations, but he considers some more complex aspects of trust that do not become clear in the example of the prisoner's dilemma. Since a principle-agent relationship is characterised by the act of entrusting responsibilities, they can be seen as truster-trustee relationships. Shapiro takes into account the role of social embeddedness of collaborations. He concludes that they are a key instrument that helps principles to constrain agents' actions. He further suggests that episodic collaboration contains more risk than continuous collaboration because continuous collaboration gives people the chance of revenge. In addition, he puts forward the argument that trusters who are not able to evaluate their trustee's performance take a greater risk. This may be the case if the trustee is a greater expert in the field than the truster such as a layman who lets a car mechanic repair his car. It will be impossible for the layman to evaluate the mechanics work properly. Therefore, people who are not able to evaluate the trustee's work are less able to constrain the trustee's actions and they need to place more trust in the trustee. Also, agency offerings that are difficult to rescind or reverse increase risks and require increased levels of trust from the truster (Shapiro, 1987). In the sum, the less a principle can constrain an agent, the higher the risk and the purer his role as a trustee.

Another way of looking at risk is to differentiate between predictable risk and unpredictable risk. A predictable risk is present when outcomes and corresponding probabilities are known. This is the case in many forms of gambling or roulette where there is a set number of outcomes and the probability of each outcome can be mathematically determined (Ellsberg, 1961). An unpredictable risk is different in the sense that either the outcomes are not

predictable, or the probabilities of known outcomes are not determinable. The risk is ambiguous. Trust in human beings is generally the latter, since behaviour is rarely predictable. Even in cases such as the prisoner's dilemma with a limited number of outcomes, the probability of each outcome cannot be statistically determined. A risk situation that is paired with ambiguity was found to lead to affective or intuitive decision-making rather than cognitive decision-making. (Roghanizad & Neufeld, 2015)

### **Vulnerability**

Seen from a less business-related but more interpersonal angle, increased risk means greater vulnerability. This approach resembles Riegelsberger and colleagues' (2005, p.386) definition of trusting action "as a behaviour that increases the vulnerability of the truster". Mayer, and colleagues (1995) have explained trust as the willingness to be vulnerable and risk-taking behaviour as the behavioural outcome of underlying trust. This underlines not only once more the common view that trust is not identifiable by the mere analysis of behaviour, but it also explains the relationship between trust and vulnerability. Baier (1986) adds to the discussion of vulnerability that especially emotional vulnerability in relation to trust has long been ignored. According to her, trust researchers have long focussed on unemotional, distant relationships between individuals of equal power. She gives the example of moral philosophers who have studied interactions and trust relationships between white men. Slave relationships or even relationships within families were supposedly not taken into consideration. The results are theories and conceptual case studies such as the prisoner's dilemma that may not apply to most cases in the real world.

### **Implicitness, Awareness and Intentionality**

There are three more features of trust that are crucial characteristics of it and that shall be discussed in this introduction: implicitness, awareness and intentionality. Whether the trust is implicit or explicit has much to do with the situation it occurs in. If the trust does not lead to any risk-taking behaviour but remains a mere willingness to be vulnerable, it is generally not explicitly communicated or observable. But the implicitness of trust is not a coincidental feature. Baier (1986) even suggests that it is essential for many types of trust relationships to start inexplicitly and non-voluntarily. She claims these are the prerequisites for the moral and social works of trust that differentiate it from simple contractual agreements.

Whereas implicitness describes whether trust is observable from the outside, awareness refers to the truster's internal perception of trust. In Baier's (1986) point of view, there are three states of awareness about trust, namely unconscious trust, conscious but unchosen trust, and conscious trust that the truster actively cultivates.

This classification is in line with Greener's taxonomy of trust in medical consultations. He speaks of hegemonic trust, coercive trust, and voluntary trust. Hegemonic trust is closely related to unconscious trust and arises when, for example, a patient is not aware of alternatives to a choice. This may be due to configurations of a system. He thus automatically places trust in the only option he sees. In more concrete terms this could mean that a patient agrees to let a doctor conduct a dangerous treatment because the setup of the healthcare system obfuscates alternative treatments. Greener's notion of coercive trust matches Baier's conscious but unchosen trust. Greener further describes it as trust relationship in which a person does not have any other option as to trust the other. This could be the case in emergency situations, in which a patient does not have the time to change to the physician of his choice but trust the emergency staff. Lastly, there is voluntary trust that corresponds to Baier's notion of conscious trust that the truster actively cultivates. It refers to either kinship-like bonds of continuous relationships between people, or confidence in particular institutions or professions. An example would be the long-lasting relationship between a patient and his chosen GP.

The different levels of awareness about trust are a precondition to possible intentions of trust. It should have become obvious that an individual that is subject to hegemonic or unconscious trust cannot possibly trust in an intentional manner. His trust is an almost automatic result of the system's configurations. Also, the individual that trusts in a conscious, but unchosen way is highly unlikely to trust with an intention – he does not choose to trust in the first place. But the voluntary truster is a complex case in terms of intentionality. His trust may be either intentional or unintentional. As Baier (1986, p.235) puts it: “one need not intend to achieve any particular benefit from it (trust) - one need not trust a person in order to receive some gain, even when in fact one does gain”. In other words, even voluntary trust is not necessarily a purposive action, although it can be related to the wish for a particular outcome.

The above paragraphs should have pointed out to the reader that trust is a highly complex and situational phenomenon. It is not possible to determine whether trust is implicit, explicit, intentional, or unintentional just from its inherent characteristics. It is the relationship between the truster and the trustee as well as the system they interact in that determine the nature of the trust between them.

## **Conclusion**

It is safe to say that researchers across all areas agree that trust is an important factor that eases social interactions in general and cooperation in particular. What is more, there is a general consent that trust and risk go hand in hand: in a risky situation, either trust or assurances such as contracts are needed to ease cooperation. (O'Neill, 2002)

What remains unclear is whether trust is a psychological state or a behaviour. Since this dissertation is approaching the topic of trust from the social psychology perspective and not from an economics perspective, I will join the view of most social psychologists who see trust as a psychological state that moderates behaviour.

Rousseau and colleagues (1998) define trust as follows “trust is a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behaviour of another”. Although this definition is not comprehensive, it does indeed capture the elements that most researchers agree on very well and will serve as a working definition of trust throughout this research report. (see also Burnham, McCabe, & Smith, 2000; Colquitt, Scott, & LePine, 2007; Held, 1968; Rotenberg, 2010)

## **Related Concepts**

### **Trustworthiness**

One distinction that caused confusion in the past is that between trust and trustworthiness. Colquitt and colleagues (2007) have defined trustworthiness as the ability, benevolence, and integrity of a trustee. Trustworthiness is, therefore, an antecedent to trust. Another approach to conceptualise the difference between trust and trustworthiness would be to say that trust refers to the attitude and behaviour of the truster which is built on *perceived* intentions, motives, and competencies of the trustee, whereas trustworthiness reflects the trustee's actual characteristics (McEvily, Perrone, & Zaheer, 2003).

But what exactly is the impact of trustworthiness on society? Niklas Luhmann (1980) for example argues that trust can reduce an institution's complexity. The feature of trust that he actually refers to is trustworthiness: only if the actors that one relies on are trustworthy, a reduction in complexity can be fruitful. Trust in untrustworthy parties would not allow for reduced complexity, but it would harm the continuance of the system (Hardin, 1996). Hardin even claims that the best approach to build trust is to create and support trustworthiness.

For the present thesis, both the study of trust and the study of trustworthiness will be important. The overall aim of this study is to deliver insights that might impact the development of trustworthy online medical services. As a step on the way to reach this goal, it will be important to understand the patients' state of mind and how they decide whether to trust.

## **Reliance**

Psychologists and sociologists distinguish between two similar, yet fundamentally different concepts: one is trust and the other is reliance. Trust is generally not seen as behaviour, but as a psychological state that moderates behaviour. Accordingly, trust is an underlying assumption that leads to an action; it is not an action itself (Rousseau, Sitkin, Burt, & Camerer, 1998). Lewis and Weigert (1985) put forward the argument that it is not possible to adequately understand trust by a mere behaviour-focussed explanation, although trust often manifests itself in terms of behaviour.

Reliance, on the contrary, is the action of entrusting someone with something. However, reliance is possible without the presence of affective attitudes, such as trust. This can be illustrated by the example of a car. We might rely on a car to get us from A to B, but we would never claim to *trust* a car because trust is automatically linked to a belief in the goodwill of the trustee (Jones, 1996). Baier (1986) explains the difference between trust and reliance by referring to betrayal: only a person who trusts can be betrayed. A person who relies on somebody or something can be disappointed or let down, but never be betrayed because reliance lacks the required emotional ties.

There are, however, notions of trust that allow for a different conclusion. Rotenberg and colleagues (2010) do not see trust and reliance as two distinct concepts but as two aspects of one concept. They speak of “reliability trust beliefs” that relate to the more functional layer of trust and “emotional trust beliefs” that relate to a person’s beliefs that the trustee will not cause emotional harm or breach his loyalty. Since this framework may lead to confusion about the difference between trust and reliance, the previously explained approach will be used throughout this dissertation.

### **Trust and Distrust**

From the linguistic perspective, distrust is the antonym to trust, which suggests that it is also its contrary. This relationship is more complex though. People do not either trust or distrust each other, but they may also have neutral views about the others’ trustworthiness. Therefore, trust and distrust can be rather seen as two ends of a continuum (Jones, 1996). Lewicki and colleagues (1998) describe the difference between trust and distrust through the lens of expectations. If trust is a confident positive expectation regarding another's conduct, distrust refers to confident negative expectations regarding another's conduct. Jones (1996) compares distrust to wary suspicion and further explains that somebody who distrusts is pessimistic about the goodwill and competence of another.

But although distrust is a negative emotion, it may still lead to functional outcomes. Lewis and Weigert (1985) for example explain that distrust dictates a course of action: it makes people monitor suspects and it activates institutional safeguards. If this was the case, distrust would, therefore, decrease institutional complexity just as much as trust does. In other words, distrust can result in decreased risk taking and avoidance of agency. Shapiro (1987) has written about distrust and risk-avoidance strategies in greater detail, but he does not come to the conclusion that distrust reduces complexity. According to him, a possible way of dealing with distrust in individuals is the creation of new forms of collective agency. Collective agency reduces the risk because the impact of a single agent’s defection is less costly for the truster. A real-world example for collective agency would be when a financial investor invests in a hedge fund’s portfolio instead of a single business. Collective agency bears its own risks though. Because it often increases the physical and social distance between truster and trustee, it also reduces the obviousness of moral obligations. Furthermore, it may lead to disabilities of expertise (Shapiro, 1987). In the investment example, it is more difficult for



the investor to evaluate the performance of the portfolio than it would have been to evaluate a direct investment in a company.

Although it is hard to tell whether distrust will lead to a reduction of a system's complexity, it is clear that a system that is based on trust differs considerably from a system that is based on distrust. Whilst trust would lead to more solidarity, reliance, and cooperation, distrust may lead either to atomism or complex structures of risk avoidance (such as collective agency).

Lastly, it should also be mentioned that trust can be item dependent, meaning that I might trust someone to drive me home safely, I might not trust the same person to look after my child. Therefore, it is possible to trust and distrust a person simultaneously.

### **Entrusting**

The next concept that I would like to turn to is entrusting. Just like reliance, entrusting refers to the action of agency. However, in contrast to reliance, entrusting implies an emotional and social dimension of agency as well. Approaching trust from the angle of entrusting does not only shed light on the question whom we trust, but also on what we entrust to them. This focus on the object of trust leads yet to another issue – that of the trustee's discretion. The trustee is not only in charge of looking after the entrusted object, but he also needs to decide upon the scope of his responsibility. He can fail both by acting too laxly and by taking up more responsibility than appropriate. The greater his discretionary power, the less obvious the borders of the trustee's duties. (Baier, 1986)

Jones (1996) points out an interesting connection between entrusting and distrust. One may think that entrusting or refraining from entrusting are the behavioural equivalents to trust and distrust. But since one can only either entrust or not entrust, there is no room for neutral emotions about another person. As it has been explained in the last section, one may well be indifferent about somebody and neither trust nor distrust him. Therefore, not to entrust is not necessarily a sign of distrust. It can also be a sign of insufficient evidence or no need for collaboration. This is an important insight for experimental studies of trust in which conclusions are drawn from decisions about cooperation. It shows that experiments that do not consider a variety of motivations for refrain from entrusting can never fully capture the nature of a trust relationship. They might wrongly interpret a lack of cooperation as distrust.

## Origins and Facilitators of Trust

It should have become clear that trust itself is a complex construct. Even by looking at the distinction between emotional trust and cognitive trust, it is obvious that the underlying reasons and motivators behind trusting attitudes are manifold. In the following chapters, I will discuss a variety of different origins and facilitators of trust.

### Information

One rather obvious antecedent of trust is information. The issue of information has changed drastically throughout the past decades. While a lack of information and secrecy used to be the predominant problems back then, we are nowadays flooded by information. New technologies such as broadcasting, and the internet have enabled fast spread of information. However, the very technologies that ease the spread of information do also ease the spread of misinformation and even disinformation. The main challenge, therefore, is not predominantly to gain information but to tell right information from wrong information. (O'Neill, 2002)

What is needed is the means to judge the information required to test trustworthiness. One approach to this is to assess the very source of our information. O'Neill (2002) discusses this issue on the societal level. She describes how we depend on the media to provide us with information on the trustworthiness of institutions, the government, and different professions. We are, however, left with the question whether the media is trustworthy itself. And if we cannot trust the press, how can we possibly tell whether to trust the parties they report about? In conclusion, *trustworthy* information requires that trusters can assess the quality of this information and the credibility of its source.

### Institutions and Legal Frameworks

I would now like to turn to the distinction between macro and micro perspectives of trust. Hardin (1996) argues that social controls are a key enabler of trust relationships. These social controls are external mechanisms that lead to adherence to agreements and, consequently, increase trustworthiness. Hardin (1996) explains further that there are two modal categories of social controls: small-scale controls and elaborate, large-scale controls. Small-scale controls are for example long-term relationships of families and friends or even business relationships. Large-scale social controls would be laws and similar institutional control

mechanisms. Several control mechanisms such as institutionalized religious controls and broad social norms can be seen as “mixed social devices”.

Hardin’s distinction between large-scale and small scale-social controls is very similar to what Lewis and Weigert (1985) and Luhmann (1979) refer to as personal trust and system trust. According to them, an important difference between these types of trust is their “base”. Personal trust is said to rely on the emotional bond between people. It prevents defection and increases trustworthiness because people want to avoid the emotional pain related to breaches of trust. System trust, on the other hand, is based the more abstract perception that “everything is in proper order” (Lewis & Weigert, 1985, p.974). Trust is ensured because legal mechanisms and societal order seem functional.

But these two different trust systems do not just exist side-by-side or independent of each other. Also Durkheim (1997) has elaborated on personal and system trust. In his view, institutional trust underwrites interpersonal trust. When a person loses faith in the system he operates in, he is likely to lose trust in its individual actors as well. This view is supported by O’Neill (2002) who proposes that without functioning institutions, duties would not be met and rights would not be respected. Consequently, society would expect a general decrease of trustworthiness and reliability.

What is more, the relationship between the two systems is dynamic and is subject to change over time. Already in the 70ies, Luhmann (1979) spoke of a change from a social order that was based on interpersonal trust to a social order based on system trust. In his view, this development was caused by a shift from small, undifferentiated societies to complex societies that rely on the mechanisms of bureaucratic sanctions and safeguards, in particular the legal system. Since Western societies have even become more complex after Luhmann’s writings on interpersonal and systems trust, one may assume that we are moving even more towards system trust-based societies.

## **Contracts**

As it has been already mentioned briefly in the last section, institutions and governments provide sophisticated tools to enable trust. Amongst them are contracts. As contracts are among the most common trust enabling tools, I would like to discuss them in further detail.

Hume (1985) famously referred to contracts and promises as artificially arranged and secure ways of building trust. The offer to accept a contractual agreement is always an invitation to trust – although it may not be explicitly mentioned. One reason contracts enable trust is their explicitness. Not only do they make trustees accountable for their performance, they also state the exact scope of the object of trust. The enforcement and assessment of the trustee's performance are, therefore, clearly eased (Hardin, 1996). But the comparison of trust relationships and contractual agreements is nevertheless lopsided because contractual agreements only cover the behavioural aspect of trust. Agreeing to a contract may be equal to relying on somebody to do something, but it is not necessarily a proof for trust. What is more, one can agree to a contract at will, but it is impossible to trust at will (Baier, 1986). Hence, contracts may be seen as facilitators of trust because the penalties related to them reduce risks of a trust relationship. However, they do not represent an equivalent to a trust relationship.

### **Trust as a Personality Feature**

Individual differences amongst people may be another factor that influences their likelihood of trusting in others. Rotter (1980) for example has studied trust in the framework of personality. He uses the terms “high trusters” and “low trusters” when he is referring to people's general attitude towards trust. His basic assumption is that our expectancies about the outcome of a situation that would require trust are based on similar previous experiences. These experiences shape a person's attitudes and personality. Whether a person trusts another person to do something would, therefore, not be a predominantly situational decision, but it would instead be determined by the personality of the truster. Also, Hardin (1996) argues that trust can be learned. According to him, critical judgements about trustworthiness are generalisations of encounters with other people. Thus, past experiences would determine whether people place trust easily or, on the contrary, with great care.

Rotter (1971) has also tested his assumptions about the relationship between trust and trustworthiness empirically. He has not only found a relationship between these two parameters, but also a relationship between a person's trust scores and his own trustworthiness meaning that a person who is more trusting tends to be more trustworthy as well. It, therefore, seems that trust can lead to upward or downward spirals. Depending on how trustworthy we perceive the world around us, we adjust our own behaviour.

The work of Colquitt and colleagues (2007) is a more recent example of empirical studies of trust as a personality feature. These researchers have analysed the relationship between trust propensity and trust. Trust propensity is defined as a dispositional willingness to rely on others and seems therefore comparable to Rotter's and Hardin's notion of trusting personalities. The result of their study was that trust propensity is significantly related to trust and trusters' assumptions about all levels of the trustees' trustworthiness (ability, benevolence, and integrity).

In contrast to these personality-centred notions of trust, other researchers take a more situational approach to trust research. As mentioned previously, it is a common practice to use laboratory experiments, particularly the "prisoner's dilemma" (PD) game to study trust. These studies assume that trust shall be understood in strictly behavioural terms. What is more, some researchers highlight the dynamics of groups and claim that interpersonal trust cannot be reduced to individual psychology (Lewis & Weigert, 1985). Also, Mayer and colleagues (1995) put forward a model in which whether a person is trusting or not depends highly on the current environment. Despite the focus of their model, they do admit that this only allows them to capture trust at a particular point of time. They suggest that longitudinal studies would be needed to understand the evolution of trust relationships.

In conclusion, it is important for any experimental study of trust to know of these different explanations of the origin of trust. Studies that ignore either of the possible sources of trust – the personality focussed ones or the situational ones – are prone to misinterpret results. The concept, which is of higher value for this study is that of situational trust because the focus lies in the attributes and opportunities of eHealth providers that impact on the users' trust perception. At the same time, trusting personality traits will be considered as moderating factors.

### **In-group and Out-group Behaviour**

As mentioned in the last section, there are several situational aspects that need to be taken into account when evaluating trust attitudes. Amongst these aspects are in-group and out-group behaviours. In general, the terms "in-group" and "out-group behaviour" refer to people's tendency to interpret the characteristics and actions of in-group members more favourably than that of out-group members (Tajfel, 1974). This pattern holds also true when it comes to trust. Foddy, Platow and Yamagishi (2009) have shown experimentally that

people are more likely to trust in people who hold the same group membership. In-group and out-group behaviour provides also an explanation for peoples' trust attitudes towards strangers. People do not pose their trust blindly, but they search for cues that would signal trustworthiness. According to Foddy, Platow and Yamagishi (2009) sharing a salient social category represents a sufficient clue for trustworthiness, because the reason for in-group favouritism is that people expect fair and altruistic behaviour from fellow in-group members.

### **Priming and Trust**

In this section, I would like to shed light on one of the heuristics that may facilitate trust in further detail: priming. Generally, priming is the effect that a stimulus has on the perception of an event that is encountered after being exposed to the stimulus (Ratcliff & McKoon, 1988). Put in more simple terms, experiences that a person has made immediately before entering a new situation change consequently her reaction to the new situation. An example would be if a person had a severe argument just before entering a business meeting. She would be very likely to be more tense and irritable than usual in this meeting.

### **Priming Related to People and Organisations**

The priming effect has been studied in a vast number of settings and varieties. A common field of inquisition is the effect of priming on memory (Tulving & Schacter, 1990). But priming can also have an influence on the perception of how trustworthy a person or organisation is. Burnham and colleagues (2000) have found, for example, that changing the term "opponent" to "partner" in the instructions for bargaining games leads to increases in trust and cooperative actions throughout the game. Al-Ubaydli and colleagues (2013) came to similar findings in an experiment in which they primed participants by making them think about markets, which lead to greater competition-focussed thinking.

Priming with legal stimuli has been found to decrease perceptions of trust (Calnan, Rowe, & Entwistle, 2006). An interesting aspect regarding the priming effect is that stimuli do not even need to be understood rationally by participants. Even subliminal cues are sufficient to evoke significant effects on trust. This has been illustrated by Légal and colleagues (2012) who have primed their experiment participants by exposing them to written words like "trusting" for time periods that are too short to read the words.

According to the presented results, it may be of high importance to consider the kind of priming that users go through before accessing virtual healthcare services. A reasonable hypothesis would be that users of healthcare services are in a non-neutral state of mind because their health-status is worrying them. Other potential types of priming may be influenced through the patients' insurance or their physician.

### **Priming, Trust, and Cognitive Inertia**

As described in the above paragraphs, this study will focus on the initial decisions concerning whether to trust the eHealth service provider, which is without a doubt subject to the priming that the user experienced prior accessing the service. A remaining question is if it is sensible to disregard issues related to the ongoing trust relationship. It is also of high importance to understand the factors that maintain trust in the long run or that lead to the loss of trust.

The reason why the importance of these factors is inferior to the trust evoked by the first impression could be labelled as "cognitive inertia". It exists a vast amount of research on how people are willing to stick to their first impression because it reduces the mental efforts of re-evaluation (Good, 2000). Accordingly, people are likely to search for cues that highlight their initial judgment and they are likely to ignore aspects that would prove their initial judgement wrong (Chaikin & Darley, 1973; Fiske & Taylor, 1991). This is also the reason why Jones (1996) argues that trust can lead to beliefs that are abnormally resistant to evidence that proves the opposite.

This behaviour does also hold true in digital environments. Baddeley (2011) for example describes in her paper how users take seemingly irrational decisions concerning their internet security software. She explains this behaviour by a range of different heuristics, among them the anchoring and adjustment bias. This bias makes people stick closely to their initial assessment of risk probabilities, changes in their attitude are mere adjustments, but large changes are unlikely. (for further examples see Acquisti, 2004)

In addition, one needs to know that trust is always linked to an affective attitude between trustee and truster. Affective emotions make us interpret actions of certain people more favourably (friends) or unfavourably (enemies) (Jones, 1996). This explains the emotional layer of why people stick to their initial judgements.

## **Trust and Reciprocity**

Some researchers see trust as a two-way concept: trust is not only dependent on one person trusting another person, but also on the relationship it creates. Jones (1996, p. 272) for example writes, "... trust needs to be supplemented with an expectation. The expectation that the one trusted will be directly and favourably moved by the thought that someone is counting on her". The idea that the trustee cares about the truster's action reinforces the trustee's trust propensity. This can be explained by a statement by (Becker, 1996). According to him, functional human beings have a natural tendency to reciprocate. Therefore, a positive, trusting attitude is likely to trigger a trustworthy response from the trustee. O'Neill (2002) compares this reciprocal trust to a virtuous spiral. However, she also points out that trust invites betrayal and betrayal leads to mistrust. Trust may not only evoke virtuous spirals, but it may also open the door to vicious spirals. Overall, this conception of trust can be summarised as a reciprocal relationship in which the behaviour of one party is heavily influenced by the behaviour of the other party.

## **Effects of Trust**

### **Importance of Trust**

There is no shortage of quotes that highlight the importance of trust. O'Neill (2002, p.1) for example refers to a tale about Confucius: "Confucius told his disciple Tsze-kung that three things are needed for government: weapons, food and trust. If a ruler cannot hold on to all three, he should give up the weapons first and the food next. Trust should be guarded to the end: without trust we cannot stand". Bok (2011, p.31) puts an equally strong emphasis on the importance of trust: "whatever matters to human beings, trust is the atmosphere in which it thrives". But what is it that gives trust this immense impact? Luhmann's (1979) account of trust helps to shed light on this question. In his view, trust enables people to handle complexity. Without trust, we would not be able to have others act on our behalf and, therefore, we would be overwhelmed by tasks. Put differently, trust is the very basis of outsourcing and agency relationship (Shapiro, 1987). Parsons (1970) emphasizes yet another feature of trust. He claims that trust is the attitudinal basis for solidary and loyal relationships.



All these quotes and sayings provide a ground for the belief that trust is a purely positive feature and that it is always desirable to increase trust. Unfortunately, things are more complex and trust can also be undesirable. I would like to use the following section to introduce several concerns related to trust.

### **Ethical Implications of Trust**

Baier (1986) is one of the key writers on trust and morality. Other than most moral philosophers, she does not classify trust *prima facie* as good and the disappointment of trust as bad. She has raised concerns not only about the type of collaboration trust may support but also about the ethical implications of trust relationships themselves.

As it has been pointed out in the last section, trust enables agency and complexity in society. At first glance, this is a needed and a positive feature of trust. A closer examination, however, leads to the conclusion that not all agency relationships are beneficial for society and that, therefore, trust can also help to maintain morally questionable undertakings. A famous example would be the Mafia or any similar organised crime. Without a doubt, these groups endanger society. But although the Mafia is an inherently anti-social movement, internally, it is as much dependent on interpersonal relationships and trust as any other organisation. In other words, in certain circumstances trust is the facilitator for a crime. (Baier, 1986)

What is more, trust may also open the door to dependencies. If a truster is highly dependent on what he has entrusted to the trustee, the trustee's power in their relationship increases. As a result, the trustee may be tempted to abuse his power. But this is not the only conceivable type of power inequality. It may as well be the truster who abuses the trustee. If the trustee depends on the truster, the truster may exploit the trustee. This might, for example, be the case when an employee is highly dependent on his position in a particular company and the employer could easily abuse this dependency. Baier (1986) refers to this case as the truster's threat advantage.

A further issue is that of concealment. This may be the case in an employment relationship. An employee may have only been employed because he has concealed certain past deeds and the employer, therefore, places his trust only because he has been deceived. In the light of all these morally rotten trust relationships, Baier (1986, p.259) has introduced a trust test that helps to distinguish positive from negative accounts of trust: "trust is morally decent

only if, besides whatever else is entrusted, knowledge of each party's reasons for confident reliance on the other to continue the relationship could in principle also be entrusted, since such mutual knowledge would be itself a good, not a threat to other goods.”

Lastly, it should be mentioned that trust may not always be welcome by the involved parties. It may also be seen as a pressure on the trustee to perform – although the truster does not hold any exploitative intentions. Trustees may fear that they cannot live up to the trusters expectations or they may be worried about the full extent their responsibility may take in the long-run. It may also be that many others are already relying on them and that yet another truster becomes a burden for them. (Jones, 1996)

Having discussed all these potentially negative aspects of trust, it becomes obvious that the role of trust in society is a rather complex one. The immense importance of trust to maintain any agency relationship shows that it is impossible to eradicate trust. The overall approach of this research report will be to aim for a better understanding of trust enabling factors, but to simultaneously bear in mind the risks related to trust. The aim is not to discover an easy recipe that anyone (no matter if saint or daemon) can use to build trust. The aim is much more to help trustworthy individuals and organisations to communicate their trustworthiness.

### **Trust and Decision-making**

In this part of the report, I would like to discuss the relationship between trust and decision-making. In the last chapter, examples that deal with trust as a facilitator for cooperation and agency have been mentioned. It is, therefore, obvious that trust relates to people's decision-making. But *how* does trust influence decision-making processes? In many respects, the relationship between trust and decision-making equals the old question “What came first - the chicken or the egg?”. Applied to trust relationships and decision-making the problem is that we often need trust in order to take the decision to get involved in something, but we also have to take the decision to trust before trust can be used for decision-making.

The aspect of using trust as a facilitator for decision-making can be nicely illustrated by Kahneman and Tversky's concept of heuristics and biases (Tversky & Kahneman, 1974). Whenever people must make quick decisions that are not entirely based on rational reasoning, they make use of mental shortcuts. Examples of these shortcuts would be

prejudices, stereotypes, priming and trust. According to Lewis and Weigert (1985) trust is needed in this context because people have neither the time nor the resources to forecast rationally the outcome of all the decisions they need to take. Therefore, trust is a functional and quicker alternative to purely rational prediction.

On the other hand, there is the question of where trust comes from. Before trust can be used as a heuristic for decision-making on an issue, people need to decide on the trustworthiness of other people or organisations. Since the main aim of the study on hand is to understand which factors enable trust relationships on the internet, the second aspect (which factors make people trust) is at first glance of higher importance. It is important to understand the entire decision-making process and the role that trust plays as a heuristic. This understanding is also of great importance for to the evaluation of experiments. As pointed out before, the outcome of decisions (especially cooperation in game experiments) may be mistakenly interpreted as trust although they are two separate items. It is, therefore, important to consider both the behavioural and the attitudinal dimension.

## **Online Trust**

### **Introduction**

Trust relationships on the Internet have many features in common with offline trust relationships, but there are as well several crucial differences. Looking at definitions of online trust the key differences do not immediately become clear. Corritore, Kracher, and Wiedenbeck (2003) for example define online trust as “an attitude of confident expectation in an online situation of risk that one’s vulnerabilities will not be exploited“ and Lee and Turban (2001) see online trust as “the willingness of a consumer to be vulnerable to the actions of an Internet merchant”. Accordingly, both offline trust and online trust reflect an underlying attitude about the other parties’ actions.

What these definitions not capture is the complexity inherent in the structure of any online service and the trust relationships related to it. Trust on the Internet can never be as simple as interpersonal trust because it involves several further levels. Apart from trusting the person on the “other end” of the connection, the user needs to trust in the technology involved and in the organisations providing the services (Lee & Turban, 2001). Some authors claim people cannot trust in IT systems because IT systems are no moral agents and

can, therefore, not deliberately cooperate or defect (Jones, 1996; Cheshire, 2011). Empirical research has shown, however, that people do treat computers and even software as if they were human beings. They attribute intentions to the actions of these devices and develop in-group / out-group emotions depending on the devices' characteristics (Friedman, 1995; Nass & Moon, 2000). Nass and Moon (2000) even found that people apply gender stereotypes to computers and show learned behaviours towards computers that usually only apply in the social domain. Corritore and colleagues (2003) explain these phenomena by the fact that although computers lack moral agency, they do hold a social presence. I will, therefore, take trust in IT systems into consideration in this Ph.D. study.

The next point I would like to elaborate on is what Riegelsberger (2003) calls "disembeddedness": online transactions are stretched over space and time. As a result, social cues that can be used in face-to-face interactions to evaluate the other person's trustworthiness are absent. Eye contact and dilation of pupils, for example, are involuntary signals that can help to uncover defection in the real world. In online-based interactions, these mechanisms do not work because the sender has a greater control over the signals that he sends (Wacewicz & Zywickzynski, 2012). Cheshire (2011) adds to this that the anonymity that is inherent in many online interactions further increases users' sense of insecurity. What is more, since Internet transactions are more complex than most offline services, users do often not fully understand the risks related to them (Wang & Emurian, 2005). Hence, trust on the Internet is just like offline trust a means to enable cooperation and risk-taking, but it involves several complexity increasing features as compared to offline interpersonal trust.

### **Factors that Enable Online Trust**

In the following section, I would like to discuss which factors establish trust. In the literature, these factors are labelled interchangeably as antecedents, underlying dimensions, determinants, or principles of online trust (Wang & Emurian, 2005). Firstly, I will shed light on different antecedents that are environment specific. Environment-specific antecedents are all the factors that define the context of the relationship between trustee and truster and that are usually not under control of either of them. Secondly, I will summarise the literature on truster-specific antecedents which are the personal attributes and actions of the truster. Lastly, I will discuss trustee-specific antecedents. These are inherent characteristics of the trustee as well as strategies to win trust. In online environments, the truster is usually the user of the service and the trustee the provider of the service. In certain situations, such as

in online forums or online auctions, both the trustee and the truster can be users of an online service.

#### Environment-specific Antecedents

Researchers have found that several environmental factors can ease or hinder the establishment of trust. Firstly, institutional factors such as structural assurance and situational normality influence perceptions of trustworthiness. Structural assurance stands for a functioning legal system and social control mechanisms (Hardin, 1996). Situational normality means that a situation does not differ from key norms and standards of a given society. Gefen and colleagues (2003) have proven the validity of this assumption in the online context empirically and conclude that institution-based beliefs of structural assurances and situational normality have the greatest impact on perceived trustworthiness.

Secondly, one may assume that cultural differences, such as those classified by Hofstede and Minkov (2010), would influence trust on the Internet. In a cross-cultural study including participants from Finland, Israel, and Australia, Jarvenpaa and colleagues (2006) have shown that this is not the case.

#### Truster-specific Trust Antecedents

Individual differences amongst trusters are said to be another factor that influences their likelihood of trusting. As previously mentioned, Rotter (1980) has studied trust in the framework of personality. His basic assumption is that our expectancies about the outcome of a situation that would require trust are based on similar previous experiences. These experiences shape a person's attitudes and his personality. A study conducted by Gefen (2000) has shown that personal disposition to trust does also impact on Internet-specific trust. Furthermore, Thatcher and colleagues (2007) have studied the reasons for internet anxiety and came to the conclusion that this phenomenon is predominantly due to users' personality. Anxiety is not the exact opposite of trust, but certainly, it can be classified as an emotion is rather contrary to trust. Therefore, one may expect that a predisposition for online trust would be influenced by personality in a similar way as internet anxiety.

Corbitt, Thanasankit, and Yi (2003) have analysed yet another person-specific trust antecedent as part of a larger online study: Internet experience. According to their findings, users with more Internet experience were more likely to trust in e-commerce. Also, Abdul-Rahman and Hailes (2000) claim the truster's experiences have a considerable effect on his trust. Their model has, however, not been tested empirically. Gefen and colleagues (2003) found that familiarity with the usage of websites as well as with specific e-vendors increases trust, which is conceptually very similar to Corbitt, Thanasankit, and Yi's (2003) finding on internet experience.

What is more, age has been found to be a factor that influences people's attitude and trust in online services. Liao and Fu (2014) concluded that older adults were less likely to spot credibility cues in health-related information as compared to younger adults. According to the same study, older adults were found to passively accept web information without deeper reflection on its quality and aspects such as design and source identity.

### Trustee-specific Trust Antecedents

In this section, I would like to introduce trustee-specific antecedents. They are the antecedents that need to be understood by individuals and organisations that aim at establishing trust on the Internet.

McKnight (2002) has conducted a content analysis of over 30 different papers that include trust models. In these papers, a vast variety of trustee-specific antecedents have been proposed: among them factors such as competence, dynamism, responsiveness, and reliability. McKnight (2002) has grouped the most common antecedents according to the following themes: competence belief, benevolence belief, and integrity belief. These models are closely related to Mayer, Davis, and Schoorman's (1995) account of trust. The only difference is that they speak of ability instead of competence.

Also authors in the field of IT and HCI agree to these antecedents. Gefen (2002) for example translates the factors integrity, ability, and benevolence to particular actions on the Internet without changing the overall concept. In the sum, although different authors use different terms to describe trust evoking features, they are in fact very similar. They all contain factors related to integrity, competence, and benevolence.

The mentioned studies, however, do not provide any information on the question *what* it is that makes an online service appear competent, benevolent, or integer. This issue has been addressed by a number of design-focussed studies. Wang and Emurian (2005) have developed a model with four types of design features that lead to trust. The model includes graphic design, content design, structure design, and social cue design. Graphic design refers to visual factors such as choice of colours and quality of displayed images. Structure design stands for the organisation and accessibility of the website. Is it easy to navigate? Are items grouped together logically? Content design refers to any type of content on the website. This means textual information as well as for example video content or trust seals. Lastly, social cue design summarises all means by which the trustee either provides or imitates social interaction. This could be through the usage of photos as well as through live chats or avatars.

Unfortunately, this model is solely based on literature and has not been proven empirically. Since it provides a logical structure to the many different features that may or may not influence users' trust, I have used it as a tool in qualitative studies. More information can be found in the methodology section. In the following paragraphs, I will elaborate on studies that analysed individual features and their impact on trust. All of them can be classified into one of the larger categories which Wang and Emurian (2005) established (graphic design, content design, structure design, and social cue design).

### ***Interpersonal Cues and Social Presence***

The next point I would like to elaborate on are interpersonal cues, social presence, and virtual re-embedding. These terms refer to design features and functionalities that lead users to the impression that they are dealing with real human beings on the other end. They do not necessarily refer to actual contact with another person but include features such as photographs, phone numbers, and avatars. Third-party reviews could be classified as a social presence enhancing factor but will be discussed separately.

Also, Riegelsberger and colleagues (2003) have analysed website specific trust antecedents. They were particularly interested in social cues such as photographs. Their conclusion was that photos do lead to significant effects in perceived trustworthiness, but they suggested that the impact is highly depended on the context and the type of photo being used. What is more, they highlighted that the addition of photos increased the perceived trustworthiness of online vendors with a bad reputation and decreased the perceived trustworthiness of vendors

with a good reputation. Hence, photos overall decreased users' ability to differentiate between vendors that are objectively trustworthy or not trustworthy. One could say that photographs have the ability to mislead users.

In a recent study, Lu and colleagues (2016) examined how social presence influences trust and social commerce purchase intentions. They segmented social presence into three different sub-categories: social presence of web (including sense of human contact, personalness, sociability, human warmth, and human sensitivity), social presence of others (including the sense that many other buyers feel interested and many other buyers are sharing information), and social presence of interaction (including being able to make sense of the attitude of the seller and imagining how the seller looks like). In an experiment with over 600 participants, they found a correlation between these social presence factors and trust. It does not become clear from the study which website features led to the impression of social presence, but the study serves as a valuable example that users' impression of social presence both of the seller and of other buyers plays an important role in the formation of trust.

### ***Trust Seals***

Trust seals are third-party trust certification bodies such as TRUSTe and Verisign that facilitate privacy compliance and risk management for companies. The existing findings on the influence of trust seals on the formation of trust are mixed. While Mcknight and colleagues (2004) did not find any impact of either TRUSTe privacy seals or professional association seals on trust, Özpolat and Jank (2015) could find an impact. Their findings come, however, with a number of specifications. They found that the impact of trust seals is larger for small retailers and new shoppers, which means the seals substitute for the shoppers' experience and the retailers sales volume. What is more, the usage of several trust (i.e. more than two) seals decreased the effectiveness. Lastly, trust seals were found to be more effective for high-value shopping carts and at the end of the purchasing process.

Also, Kirlappos and colleagues (2012) found mixed results in their study of trust seals. They used eye-tracking to analyse whether users take notice of seals. 38% of their 60 participants did not notice the trust seals. When seals were noticed, users gave a significantly higher rating to the respective website. Most users, however, were not able to define what exactly the seals stand for.



In the sum, trust seals may have a beneficial effect on trust, but only in certain circumstances and when used sensibly.

### ***Third-party Reputation Information***

Next to trust seals, reputation systems are another trust enhancing factor that relies on information from third-parties. Third-party reputation information can be either in-built on an e-commerce website or on external review websites. It is a common way to infer the trustworthiness of online-based merchants and service providers. (Fuller, Serva, & Benamati, 2007)

From a rational perspective, the solution is vulnerable to fraud and deception and, therefore, not a fully reliable approach to communicate trustworthiness (Cheshire, 2011). In terms of impact on users' trust, however, third-party reputation information has been found to be impactful. Fuller (2007) conducted a study in which participants were initially exposed to reviews of an online shopping portal and were shown the portal thereafter. Measurements were taken after viewing the reviews and again after visiting the shopping portal. The researchers found that previous exposure to third-party reviews had an impact on the final evaluation of the shopping portal.

### ***Usability***

In the following, I would like to elaborate on usability. Usability describes the ease of use and learnability of a website or application. Empirical studies such as a study conducted by Flavián, Guinalú, and Gurrea (2006) have proven the correlation between high usability and trust. In the mentioned study, researchers have found that usability (as conceptualised by specific usability measurement inventory scales) leads to both higher trust and loyalty in websites. A similar study by Pengnate and Sarathy (2017) went a step further and not only measured ease of use but compared ease of use and visual appeal. The result was that both are contributing factors in the formation of trust, but visual appeal had overall a stronger influence than usability. According to Gefen and colleagues (2003), a website that is of low usability and takes the user effort to navigate does not imply benevolence towards the user. Since perceived benevolence is a major contributor to perceived trustworthiness, it is comprehensible that ease of use impacts directly on trust.

### ***Hygiene Factors***

There are several other factors that have been mentioned in the literature that can be classified under the term “hygiene factors”. These factors do not give trustees an additional trust boost, but they rather break trust when applied incorrectly. They exemplify the minimum criteria for a trustworthy website. The first hygiene factor I would like to mention is commercialism – or rather a lack thereof. Fogg and colleagues (2001) found that advertising such as banner ads had a negative effect of perceived credibility and trustworthiness of a website. This held true independent of the reputability and quality of the ad, so even high-quality advertising will have a negative effect on perceived trustworthiness. This finding is supported by a second large-scale quantitative study by the same research group as well as a qualitative study that analysed nurses’ patterns of information seeking on the internet (Fogg, Marshall, Laraki, et al., 2001; Jenkins, Corritore, & Wiedenbeck, 2003).

Other hygiene factors include items such as the absence of machine errors, broken links, outdated information, and long loading times (Corritore et al., 2003). The same study also mentions that freedom from grammatical and typographical errors represents another important hygiene factor. Gefen and colleagues (2003) add that website providers shall aim to understand the sequence of activities, functionality, and contents that match the mental models of users. Designing a website in line with users’ expectations and mental models increases the chance that hygiene factors are met.

Overall, there is an agreement that websites’ design and additional features influence trust antecedents, but there is a great need for further empirical studies in this field.

## **The Relationship Between Online Trust, Risk, and Security**

### **Trust versus Security**

As discussed in earlier sections, trust and risk are inherently linked. Cheshire (2011) gives a detailed account of the relationship between these factors. First and foremost, he notes that trust is only relevant where risk and uncertainty exist together. Trust is a complex human response that enables us to act in situations that are unpredictable and risky. Regarding to the internet, there are two scenarios how a risky situation such as an online purchase can be dealt with. On the one hand, organisational or institutional mechanisms can protect the buyer from fraud.

On the other hand, the buyer can trust the online merchant and accept a lack of organisational or institutional protection mechanisms. Cheshire (2011) highlights that in the first scenario, the presence of protection mechanisms supplants the development of trust. Trust is not needed because the risk is eliminated. The author concludes that reliance on third parties for buyer protection reduces risk, but compromises on the evolution of sustainable trust relationships.

Gefen, Karahanna, and Straub (2003) add to this that third-party protection comes at a cost. Legal contracts and monitoring procedures need to be paid whereas trust is free from financial investment. The less trust the more financial investment in protection mechanisms and external enforcement is needed. (see also Diekmann & Lindenberg (2001))

### Actual Risks

Now that the relationship between online trust and risk is established, it remains the question what actual risks users are facing. According to Friedman, Kahn, and Howe (2000), the main risks in the online environment are the loss of money and loss of privacy.

Regarding a loss of privacy, the major concern is that users often do not even know which kind of personal data is being collected or what their data is being used for. The reason is that users find it difficult to predict the other party's motives and that sometimes, data might even be collected whilst the user is browsing and not purchasing from the website (David Gefen et al., 2003; Hoffman, Novak, & Peralta, 1999). Financial loss can have several reasons. Firstly, there is the risk of unfair pricing. Secondly, there is the risk of unauthorized use of credit card information, either by the merchant or due to data leaks. (Lee & Turban, 2001)

In addition to financial loss and privacy loss, Comegys, Hannula, and Väisänen (2009) name performance risk, time loss, delivery risks, social risks, and risk related to the reliability of information as further possible dangers of internet usage. Performance risk is linked to the performance of bought products or services. Social risks are linked to consequences of behaviour on social media or publication of articles for example. The risk of the reliability of information manifests generally offline when one puts a health advice from a forum into practice or uses unreliable information in university work.

What can be done to prevent these risks? According to Vos and colleagues (2014), online security consists of four main pillars: authentication, authorization, encryption, and auditing. For the user that means he should use an anti-virus software, a safe browser, only make purchases through verified online stores, and make use of complex passwords. Also, he should look for payment standard labels such as SET (Secure Electronic Transaction), and SSL (Secure Socket Layer).

### User's Perception of Risk

Apart from objectively existent risks, perceived risk plays a large role in the formation of trusting relationships between the user and online service provider (or two users in the case of online platforms). Perceived risk differs from objective risks because users may not be fully aware of risks that they are facing, or they may see risks where there are none. As Wang and Emurian (2005) explain, users are frequently uncertain about the particular risks and their full consequences when transacting online.

Hong and Yi (2012) found that there are three factors that contribute to the fact that users perceive online transaction as riskier than comparable offline transactions: Firstly, the product cannot be examined before purchase. Secondly, users were unsure about the reliability of after-sales customer service. Lastly, some users cannot fully understand the language which is being used on e-commerce websites.

Another important finding is that users refer to the internet as a dangerous place, but they do not feel impacted by the risk themselves. They evaluate the probability that others suffer from damage online higher than the risk of the same happening to themselves (Nettleton, Burrows, & O'Malley, 2005). This result is in line with various Social Psychology studies in which participants underestimated risks that they are finding in different domains such as health (Weinstein, 1984). A study by Deery (2013) found though that underestimation of risk can improve by gaining more experience. The study focused on driving, but similar effects regarding Internet usage are thinkable.

### The link between risk perception, trust, and behaviour

When it comes to the impact of perceived risk on behaviour, one may assume that risk perception leads to prudent behaviour, Saeri, Ogilvie, La Macchia, Smith, and Louis (2014) actually did not find this to be true. On the contrary, they found that despite being aware of privacy risks, the illusion of social contact led people to provide much personal information online. The focus of this study lays on online platforms, so these e-commerce related findings may not be fully transferable.

There is another interesting finding on risk perception and behaviour. As long as there was no risk present, users took a rational reasoning approach to the evaluation of online vendors. But as soon as a level of risk was added by asking the participants to provide sensitive information, the way how users evaluated their decisions became more intuitive and less rational (Roghanizad & Neufeld, 2015). One way how users do so is by choosing familiar brands over unfamiliar brands because this saves them the cognitive effort that would be needed to further evaluate the new brand (Chen & He, 2003). This finding is in line with the findings of Tversky and Kahneman (1974) which outline decision making under uncertainty. According to them, we oversimplify probability estimations when faced with complexity. Relying on familiarity is one of the common heuristics that people use for decision making.

Riegelsberger (2003) argued along similar lines that attempts to build trust between online vendors and users are usually done by using cognitive signals such as certificates, whereas in fact online trust is based on affective reasons. In other words, he, too, is pointing out the importance of non-rational factors that determine online decision making. Affective reasons are not the same as intuitive decision making, but in both assumptions, researchers agree that the main factor for trust and risk-taking is *not* a rational argument.

A further, yet related, finding is that an increase in perceived risk leads to a decrease in trust and as a result to a higher need to control a transaction (Olivero & Lunt, 2004). In this study, the researchers found that the perception of risk is closely linked to the level of understanding of information collection and extraction. The better users understood the service, the less they trusted in it and hence, the more complex the relationship with the vendor became. This finding supports that trust serves as a complexity reducing agent. When it is lost, the need for control and sanctions increases.

Also, the latest studies validate the same concept. Kim and Koo (2016) found a bi-directional link between trust and risk perception. High trust lowered the risk perception whereas high perceived risk lowered trust. In addition, they found that the relationship shifted over time. High trust led to a decrease of risk perception not only at one particular moment but over time. The only problem with these findings is cause and effect are difficult to determine. It remains the question whether risk perception determined trust level or whether trust determined risk perception. The answer that Kim and Koo (2016) propose is that neither trust nor risk perception is the cause, but rather that both factors are significantly and mutually influential to the same degree.

### **eHealth-Specific Studies**

Compared to studies on the relationship between trust and e-commerce or online services in general, studies that focus on the relationship between trust and eHealth are scarce. This has been confirmed by a recent study by Van Velsen and colleagues (2016). In the following chapter, I will present the work that has been done in this specific field of enquiry and I will point out which research questions remain to be answered. Similar to trust related to e-commerce websites or other types of websites, trust in eHealth can be fostered by trustee specific antecedents or truster specific antecedents. Each of these two categories will be discussed separately in the following sections.

#### Truster-specific Antecedents

Several found that users' own characteristics impacted whether or not they trusted in online based healthcare services. Ye (2011) for example has found that consumer trust in health information on the Internet does neither correlate with personal capital nor with social capital. Neither education nor income had a significant effect on trust. She could, however, prove a relationship between age and trust in online health information. For generations below 65 years of age, she found a correlation between trust in health information from mass media and trust in eHealth, which essentially means that there is a trust transfer between different media. This trust transfer was not observable in generations of over 65 years of age. Also, Liao and Fu (2014) found that users of higher age evaluate websites differently from their younger counterparts. According to them, older users had a tendency to passively accept web information and to blindly trust user reviews.

A study by Dutta-Bergman (2003), on the other hand, came to slightly different conclusions with regards to social-demographics. In his study, he could prove a correlation between factors such as level of education and income on eHealth specific trust. His research question was what type of eHealth source participants perceived as most trustworthy and not whether or not participants trust in eHealth. Therefore, his results are not directly comparable to those of Ye (2011). He found for example that participants with low levels of education trusted information provided by insurance websites whereas participants with high income trusted in the websites of medical universities. With regards to age, he found that individuals trusting information provided by local doctors were of younger age.

One study examined the relationship between the Big Five personality traits, prior experiences with eHealth services, and trust in eHealth (Bansal, Zahedi, & Gefen, 2010). The result was that especially previous negative experiences had an impact on trust. This can be explained through the fear of experiencing problems such as privacy invasions again. Most of the Big Five personality traits were not found to have a significant impact on trust. The only trait that had a significant impact was agreeableness.

Lastly, I would like to mention a finding by Song and Zahedi (2007). Among other factors that are not related to the user himself, they found that previous experience with eHealth services influenced trust. This supports the findings of Bansal and colleagues (2010). What is more, they stress that there needs to be a fit between the target group and service design. eHealth services for healthcare personnel has very different requirements from services that target patients. If this is not taken into account by designers, this may lead to a decrease in trust.

Overall, there is some evidence that personal characteristics influence whether a person will trust in eHealth services. It is safe to say, however, that these results are fragmentary and more research is needed in order to gain a clearer understanding of the impact of social-demographic and personality-related factors on trust in eHealth.

### Trustee-specific Antecedents

The first study I would like to elaborate on is a study by Van Velsen and colleagues (2016). In their study, they distinguished between two user groups: patients and health care providers. They conducted focus groups with members of each group. In contrast to healthcare providers, patients' trust was mainly dependent on perceived levels of control over their data and privacy. Healthcare providers, on the other hand, were mainly influenced by technical reliability and transparent data storage policies. What is more, providers distrusted sensor data for patients' activity because they did not believe that tracking could result in reliable data.

As mentioned in the previous section, Song and Zahedi (2007) approached the topic of trust in the eHealth domain from a multi-faceted angle by including both truster-specific and trustee-specific antecedents. Not only that, but they also differentiated amongst three different aspects of trust: ability, integrity, and benevolence. These aspects have been mentioned previously as the key moderating factors that together form trusting beliefs. According to Song and Zahedi (2007), each of these factors is related to different antecedents. Benevolence is mainly impacted by relevance, usefulness, and reliability of the eHealth service, whereas integrity is dependent on the adequacy of information as well as trust signs embedded on the eHealth website. Ability, they found, is formed through the provider's reputation and structural reassurance.

Corritore and colleagues (2012) conducted a study that was focussed on health information websites in particular and found that especially credibility had a great impact on trusting beliefs. This result is logical because the sole purpose of a health information website is to provide credible information in order to support users' health decision making. In contrast to many other studies, Corritore and colleagues (2012) went a step further and analysed which website features led to the perception that the website is credible. They found that the website in question displayed awards and recognitions as well as biographies and photos of senior management staff. It does not become clear from the study whether they measured the impact of each of these features or if they simply assumed the existence of these features on the website increased credibility. In either case, this information provides a more design-focused insight than most other studies. Another study that looked at perceived credibility,



on the other hand, found that completeness of health information played a major role in signalling credibility (M. J. Dutta-Bergman, 2004).

Apart from the results on credibility, Corritore and colleagues (2012) found that perceived ease of use had a significant impact on trust. Lastly, they put forward the hypothesis that trust is built in two stages and that each stage depends on different factors. The initial trust-building stage is said to depend on usability factors, whereas the second stage depends on content and credibility.

This finding is comparable to a study by Sillence and colleagues (2004). These researchers specifically studied the different stages of trust formation by tracking several patients' engagement with health websites over four weeks. The first stage was what they called *rejection stage*, in which participants rejected those websites that left a negative first impression. In this stage, features such as pop-up surveys and poor layout had a negative impact on trust. The second stage was the *selection stage* in which participants further examined the content of the websites. Here, the quality of information, cultural differences, and inconsistencies played a role. These findings are in line with a study by Yi and colleagues (2013), although that study adds risk perception as a further dimension in addition to perceived information quality. Also Harris and colleagues (2011) found that information quality plays a major role in trust formation. Their study adds that impartiality influenced trust levels as well.

Sillence and colleagues (2004) also found that participants generally mistrusted pharmaceutical companies and disliked sites with a corporate look and feel. This finding is supported by Bernhardt and Felter (2004), who also found that users distrusted health websites that seemed commercial. Walther and colleagues (2004) add to this discussion that top-level domains matter as well. Advertising and other commercial features seem to have a larger negative effect on websites that are supposedly non-profits (.org ending) than on websites that openly appear as a for-profit (.com or .net ending). A brand identity that reflected participants' own social status, on the other hand, had a positive impact on trust (Sillence et al., 2004).

Overall, the main shortcoming of existing eHealth studies is a lack of differentiation amongst the variety of services that exist. Yi and colleagues (2013), as well as Schnall and colleagues (2014), found that risk perception plays a role in the formation of eHealth trust. High risk led to decreases in trust levels. From an objective standpoint, this would mean that eHealth services that only provide health information (such as online encyclopaedias) automatically receive more trust than service where users need to make payments or submit personal data. To my knowledge, there is no such comparison between different services, which means it remains yet to be tested whether patients perceive a risk to be higher when personal data or transactions are at stake.

What is more, it is unclear to what extent national culture impacts on trust in eHealth solutions. Healthcare provision varies greatly across the world and in some countries, the translation of offline healthcare services to online-based offers may be easier and evoke less distrust than in other countries. A study by Frederick and Gan (2015) hints at intercultural differences with regards to trust in eHealth, but the study only evaluated features of medical travel websites from various countries without studying users' reactions to the websites.

Lastly, I would like to highlight that eHealth-specific studies rarely mentioned interpersonal cues and social presence, whereas these features seemed of great importance for e-commerce websites. Interpersonal cues and social presence can comprise photos or live chats for example. Also, third-party reputation information received little attention. The question is whether interpersonal factors play a smaller role in eHealth than in other online services or if researchers failed to pay attention to these factors.

## Signalling Theory

### A Communication-based Perspective on HCI

Most of the approaches presented previously either focus solely on the view of the trustee or on the view of the truster, but do not analyse the potential dynamics of a trust feature and its evolution. One exception to this rule that needs to be mentioned in this context is the work by Clarisse Sieckenius de Souza (2005). She proposes the perspective that websites and user interfaces are in fact artefacts through which designers and users communicate. According to her, websites and interactive software can be seen as a one-shot message from software designers to users about how users should interact with the system as a means to achieve a certain range of goals and experiences (Sieckenius, Souza, & Preece, 2004). This perspective is tightly linked to classical semiotics that is concerned with sign systems and communication and, hence, Sieckenius de Souza (2005) suggests the term Semiotic Engineering. Sieckenius de Souza's contribution is valuable to this dissertation in that it highlights the complexity of transmitting an intended meaning from the designer to the user by the means of an interface. This perspective perfectly illustrates the complexity of an interface that is constituted of a variety of intentionally chosen signs that can potentially be misinterpreted by the receiver.

What Semiotic Engineering does not take into account is that users do not only need to grasp the functionality of the website in order to achieve certain goal, they also need to evaluate whether they trust the designer or provider enough to actually want to use the particular service in question. Which brings me back to potential trust indicators and their reliability. As pointed out in the previous sections on trust indicators, several trust antecedents such as trust propensity and experience are inherent to the truster. Other antecedents, however, are situational and can be influenced by the trustee. These antecedents are for example ability, integrity, and benevolence. The question is how trustees can communicate their possession of these antecedents in a way that is sustainable and difficult to mimic.

I would like to introduce signalling theory as a means to evaluate the reliability of trust features to communicate trustworthiness.

## **Original Purpose of Signalling Theory**

Much work on signalling theory uses the term “game” to refer to a social interaction that requires one party to entrust something to the other party. In any game, the truster does not know the exact payoffs of the trustee. The trustee’s payoffs can be classified into two groups: raw payoffs and all-in payoffs. Raw payoffs are payoffs that are specific to a certain game and are motivated by pure self-interest. They could, for example, be the monetary compensation, which is at stake in that game. All-in payoffs refer to game-overarching payoffs. They may be related to the trustee’s unobservable features such as his virtues and moral convictions. The resulting information asymmetry between truster and trustee is known as primary problem of trust. (Bacharach & Gambetta, 2003)

It exists, however, yet another important information discrepancy between truster and trustee. Since a trustee who is willing to deceive the truster would receive highest gains if he is trusted, he is likely to mimic the behaviour and the features of trustworthy individuals. As a result, it becomes more difficult for the truster to distinguish between honest, trustworthy individuals and dishonest individuals who only pretend to be trustworthy. This type of information discrepancy has been referred to as secondary problem of trust (Bacharach & Gambetta, 2003). The secondary problem of trust shows a high similarity to adaptive problems studied in evolutionary biology and evolutionary psychology. In both fields, researchers have made use of signalling theory gain an understanding of how individuals make decisions about others’ trustworthiness despite the mentioned incentives to mimic trustworthy behaviour (e.g. Grafen, 1990; Maynard Smith, 1991).

One of the original applications of signalling theories is mate selection amongst animals. The fundamental problem faced by females is the lack of knowledge about the male’s true properties. The functional solution to this adaptive problem is the usages of signals as indicators for a male’s fitness. The beautiful, yet handicapping tail plumes of a peacock is a classic example of such a signal. (Zahavi, 1975)

In more general terms, the aim of signalling theory is to study how a truster can distinguish between two types of trustees. Type 1 shares interests with the truster and would be a favourable partner. Type 2 would benefit from the truster’s trust, but the truster himself would incur a loss by trusting the type 2 trustee (Bacharach & Gambetta, 2003). So, the term “signal honesty” refers to whether the truster can rely on the signals sent by a trustee. A

complicating factor, however, is the question of intentionality. What is being studied in signalling theory is the reliability of signals to represent the senders' true features. If a signal is unreliable, it can, therefore, be a fake signal from a deceiving sender or a sincere signal that has been misinterpreted by the receiver (Wacewicz & Zywickzynski, 2012). As a result, a dishonest signal does not necessarily allow the conclusion that the sender held the intention to deceive the receiver. In conclusion, there are three essential "enemies of trust" – the first is poor information about the trustee (primary issue of trust), the second is a bad character of the trustee (secondary issue of trust), and the third is a misinterpretation of signals.

### **Different Types of Signals**

The different types of signals that exist can be classified into three groups. Firstly, indices are signals that are inherently related to their message. Secondly, costly signals (or cost-added signal) refer to signals that require an upfront investment by the sender. Thirdly, conventional signals (or minimal signal) come at little or no cost for the sender and are not inherently related to the message. (Maynard Smith & Harper, 1995)

To begin with, I would like to elaborate on indices. The term "index" has been introduced in the field of linguistics. It describes a type of signal that conveys a meaning by its pure existence (Eco, 1979). Smoke, for example, can be an index for fire. In relation to evolutionary biology, courtship feeding would be an example of a male's ability to feed offspring. Since indices are naturally related to a certain feature of an individual, they do not require any additional effort or investment from it (Maynard Smith & Harper, 1995). A further important characteristic is that indices are impossible to fake (Bliege Bird & Smith, 2005).

Now I would like to turn to costly signalling theory. Bliege Bird and Smith (2005) have stated, "the fundamental problem addressed by costly-signalling theory is how individuals with partially competing interests may mutually benefit from signalling these differences in quality". As the name of this type of signals indicates, costly signals require senders to invest in their production. These signals are also known under the term cost-added signals (Maynard Smith & Harper, 1995). In the biological sense, investment usually means that the signal handicaps the sender. In the example of the peacock, which has been mentioned earlier, the large tail plumes of the peacock reduce its agility and can be detrimental when it attempts to flee from a predator. Therefore, only the fittest and strongest individuals can

afford to carry such a tail (Zahavi, 1975). Signalling in this manner augments an individual's status if receivers do not otherwise know certain qualities (Bliege Bird & Smith, 2005). The equilibrium conditions are as follows: a sender will use a costly signal as long as the potential gains exceed the production cost signal's cost and senders will be receptive to signals as long as there is a reliable correlation between the signal and the sender's qualities. Opportunists will refrain from using a signal as long as the costliness to fake the signal is higher than the anticipated gain (Bacharach & Gambetta, 2003).

The last type of signals is known as conventional signals (Lachmann, Szamado, & Bergstrom, 2001) or minimal signals (Maynard Smith & Harper, 1995). In contrast to costly signals, they do not require any upfront investment from the signaller. The reason why conventional signals can still be functional is due to costs that can incur as a result of sending a fake signal. In the animal world, sparrows' badges nicely illustrate this type of cost. Badges are not costly to produce and stand for a sparrow's Resource Holding Potential (an index of overall fighting ability (Parker, 1974)). If a sparrow has a badge that exaggerates its fighting ability, it risks getting into fights that exceed its actual fighting abilities. Therefore, it is reasonable to have a badge that correctly represents the sparrows fighting ability (Philip Whitfield, 1987).

It remains the question when each of the different signals will be used. Due to their involuntary nature, indices are most revealing for receivers, but senders cannot use them on purpose. Since conventional signals are kept reliable by costs that incur as a result of future interactions, Bliege Bird and Smith (2005) argue that they will not be used in the case of one-time interactions. What is more, ex-post costs related to conventional signals can only incur if the signal quality is verifiable – otherwise opportunists could not possibly be punished for deception. Therefore, conventional signals will only be used if the receiver can verify the signaller's qualities. An example of this would be the mate selection of the peacock. The female cannot verify the genetic fitness of the male, therefore, conventional signals are not appropriate (Lachmann et al., 2001).

### **Signalling Theory and Human Language**

Human communication signals can be classified in a fourfold way. The different aspects that are taken into consideration are whether the signal is verbal or nonverbal and whether it is vocal or nonvocal. Verbal vocal signs are linguistic units of spoken words. The second

group, nonverbal vocal signs are spoken units that do not consist of formal language. Examples would be sighs and screams. In the third group, we find nonvocal verbal signs such as written words and signs of sign languages. The last group, nonvocal nonverbal signals, comprise what is also known as body language. Eye contact, non-conventionalised manual gestures, postures, and body movements belong to this group as well. (Laver & Hutcheson, 1972)

The reason why this fourfold classification of communication signals is highly relevant lies in its ability to shed light on signals' reliability. Spoken words are easy to produce and speaking an honest sentence comes at the same cost for the speaker as telling a lie (Lachmann et al., 2001). Therefore, spoken language bears at first glance a high risk of being used for deceiving others. However, in evolutionary theories, there are several approaches to explain why human language nevertheless prevailed and still is our main mean of communication.

The first explanation is based on deterrents and relates directly to signalling theory in the animal world. As mentioned earlier, animal signals can be classified as costly signals or conventional signals. Human language resembles conventional signals because they also come at a low cost for the signaller. Conventional signals can still be reliable if they function in combination with deterrents. Deterrents are costs, which are incurred by unreliable signallers (Scott-Phillips, 2008). The example of the sparrow that refrains from faking his badge in order to avoid costs related fights with too strong rivals (see above chapter) is a perfect example for a deterrent. Applied to human language, deterrents exist for example in the form of social costs. Liars may build a negative reputation over time, which in the long-run prevents others from interacting with them (Scott-Phillips, 2008). Accordingly, the anticipation of the social cost of lying encourages people to be honest and secures the reliability of human language as communication signals.

The second explanation looks at the context of spoken language. Waciewicz and Zywczyński (2012) have argued in their article on human honest signalling that deterrents are unlikely to have supported language evolution because they are only able to function after language has already developed. Instead, the authors propose that one subset of nonverbal cues - nonvocal nonverbal paralinguistic adaptors (NNPAs) – allowed signal receivers to predict whether a language-based signal is honest. NNPAs comprise nonvocal nonverbal cues, which are popularly known as “body language”. Paralinguistic features are

related to observable actions performed during the communication process. They stand in contrast to extralinguistic features, which exist independently of one specific communicative act (voice quality, appearance, status symbols) (Pease, 1981). Accordingly, NNPA's are dynamic and can change during the course of interactions. Research has shown that untrained subjects score better than pure chance at detecting lies. A variety of researchers have concluded that they do so by relying on NNPA's (Hale & Stiff, 1990; Knapp & Comandena, 1979). It remains the question how exactly NNPA's uncover deceptive signals. It needs to be understood that communication is reception driven (Seyfarth & Cheney, 2003). That means the receiver is monitoring his surrounding for cues that are not yet consciously used by signallers and thus depict thus a leakage of information (Maynard Smith, 1991). Hence, the less a signaller is able to control an NNPA, the more reliable it is. The entirely involuntary dilation of pupils is, therefore, an extremely reliable NNPA, eye contact and body distance, for example, are less reliable (Wacewicz & Zywickzynski, 2012). Put differently, signallers are not only sending the intended, primary signal, but also the secondary, *indexical* NNPA signal. In conclusion, NNPA's supported the evolution of human language because they added an information layer about a message, which was less subject to voluntary deception than spoken words.

Lastly, also costly signals can support the reliability of human communication. In most cases, they fall into the categories of extralinguistic features. This means that they are not tied to one specific communicative act, but they are features or behavioural patterns of a signaller that exist unrelated to the communicative act (Wacewicz & Zywickzynski, 2012). One very obvious example are status symbols. Barros, and colleagues (1999) for example have shown that physicians adopt new technologies in many cases merely to emphasize their competency, although the new technology might not improve their service offer. Bliege Bird and Smith (2005) have studied cultural conducts such as aesthetic elaboration, initiation rites, ceremonial feasting, conspicuous consumption, monumental architecture, and the individually costly provisioning of collective goods. They, too, have come to the conclusion that these behaviours serve as costly signals to underline credibility.

### **Signalling Theory and Online Interactions**

What does this mean for the website as a mean of communication? Can the fourfold classification that explains signal reliability in spoken language also explain the reliability of websites? If a website is considered as a means of human communication, the fourfold



classification of communication signals can be applied to websites as well. A classical website consists predominantly of text. Accordingly, it falls into the nonvocal verbal category. In addition, most websites also make use of additional content such as photographs, logos, images, and videos. The first three items fall into the category of nonvocal nonverbal signals and videos can comprise each of the categories of communication signals. Although these signals are nonverbal and nonvocal, they must not be confused with nonvocal nonverbal paralinguistic adaptors. Other than NNPAAs, images, photos, logos, and videos are not subject to change during one communicative act. Therefore, they are extralinguistic features and not paralinguistic features. This also means they do not proof honesty of a signal in the indexical way NNPAAs do. The reason is that they are more controllable by the sender, other than NNPAAs such as spontaneous body reactions (pupil dilation, eye contact). In the sum, classical websites do not contain content that supports the detection of deceptive signals in the way NNPAAs do.

It remain the concepts of deterrents and costly signalling. As mentioned earlier, deterrents are costs that are incurred by signallers that send unreliable signals (Scott-Phillips, 2008). There are, however, several deterrents. Firstly, revenge is a possible deterrent. Because revenge relates closely to aggression (McCullough, Kurzban, & Tabak, 2013), it has been often been interpreted as psychological dysfunction (Murphy, 2003). Evolutionary biologists, however, have argued that revenge is common amongst non-human animals to discourage opponents from repeating attacks. In other words it provides a functional mechanism to reduce fighting behaviours (Williams, 1966). Tooby and Cosmides (2008) claimed that humans adopted the concept of revenge for the same adaptive problem. Revenge can take a large variety of forms. One of these forms is physical revenge, which is a common reason for homicide (Kubrin & Weitzer, 2003) and school shootings (Vossekuil, Fein, Reddy, Borum, & Modzeleski, 2002). Due to the physical distance between website user and website publisher, it can be assumed that this form of revenge is not a prospect that would lower signaller's threshold to deceive. In the online world, revenge may, for example, take place in the form of harm to the signaller's reputation. Hennig-Thurau and colleagues (2004) discussed this behaviour under the term e-word of mouth (eWOM). The concept is similar to traditional, offline word of mouth, but it specifically refers to consumers to consumer communication on the internet. Conversations can be both in favour and hateful about a service or an organisation. A similar concept called word-of-web (WOW) has been introduced by Weinberg and Davis (2005). Both WOW and eWOM can take place on a

variety of platforms such as online forums, newsgroups, and review platforms (Tuzovic, 2010).

These forms of online revenge are closely related to another form of deterrents – the refusal of further cooperation. Provided that the signaller depends on the receiver, withdrawal from further collaboration may be so costly, that the signaller refrains from deceiving the receiver (Scott-Phillips, 2008). Refusal of collaboration is so closely related to acts of revenge because it can be the result of negative WOW. The spread of negative information about a service provider via WOW may discourage others from collaborating with the signaller (Tuzovic, 2010). So even in case a signaller is not dependent on further collaboration with a single receiver, the resulting damage of reputation due to WOW is a forceful means to ensure signal reliability.

Lastly, legal requirements can function as a deterrent. The prospect of penalties and fees that result from deception may prevent signallers from sending dishonest signals (Mavlanova, Benbunan-Fich, & Koufaris, 2012). In the field of eHealth, organisations need to act according to a broad number of legal requirements.

But the reliability of a website may also be secured by using costly signals. As stated earlier, costly signalling theory is not applicable to individual spoken encounters because the production of words comes at no cost for the signaller (Lachmann et al., 2001). Websites as a communication platform, however, come with a variety of possible costly signals. In their paper on signalling theory and information asymmetry in online commerce, Mavlanova and colleagues (2012) have generated a list of costly online signals. Among several other signals, it contains third-party seals, live chats, store locators, order tracking, and domain-specific content. The clear majority of costly signals that they have listed require a heavy monetary investment from the sender. In line with the equilibrium condition of costly signals in evolutionary psychology, it can be assumed that costly online signals are reliable as long as the cost is high enough to prevent opportunists from adopting them and low enough to be still economically viable for honest senders.

Mavlanova and colleagues (2012) have not only listed costly signals, they have also integrated both the costly signalling theory and the concept of deterrents. They have evaluated online pharmacies' usage of signals and compared it to the guidelines from the

National Association of Boards of Pharmacy (NABP) in order to test whether signal quality correlates with official classifications of the respective pharmacies. The classification they chose entailed two groups: cost and ease of verification. The *cost* group obviously refers to costly signalling theory, whereas the *ease of use* group refers to deterrents. This is the case because if a signal is easy to verify, it means deception is likely to be uncovered and social and institutional costs may incur. The result of Mavlanova and colleagues' study was that there is a correlation between choice of costly and easy to verify signals and recommendation by NABP. What this study does not show, however, is how patients evaluate the respective signals, which would be the most significant proof of signal reliability.

A valid criticism of the very idea of costly signals in the online world is that the costliness of most potential signals is both difficult to determine and susceptible to rapid change. With regards to obviousness of the cost, the overall design of a website is a good example. Websites that programmed by web developer are much more costly than websites based on a template. At the same time, templates look just as professional, meaning the investment in the design is not obvious to the viewer. A professional website that is a bit older may even look less costly than a modern template. One example for rapidly changing signal costs would be the usage of a live chat function. One may claim that it is costly for a firm to hire staff that answers the live chat 24/7. However, within a very short time, technology companies developed chat bots that answer most common live chat requests. At first glance, the chat bot is not distinguishable from a real employee, so the distinctiveness and unambiguousness of the signal is reduced. In other words, there are good reasons to question the transferability of costly signals from the animal kingdom to the online world.

### **Reliability of Signals in the Online World**

As it has been mentioned earlier, the overall reliability of signals depends on the relationship between costs and potential benefits of deception. In the case of deterrents, this means that a signaller would offset what he might gain from deception, the likelihood of being caught, and the cost that would incur if he were caught. From the rational decision-making perspective, this would result in the equation:

$$\textit{Anticipated benefit} \equiv \textit{Possible gain} - \textit{possible deterrent} * \textit{probability of detection}$$

The signaller would in this rational choice example engage in deception if the anticipated benefit were greater than zero. Signalling theory, however, provides a different explanation for the probability of signal reliability. As mentioned in the introduction to this chapter, a dishonest signal is not necessarily a signal that is intentionally aimed at deceiving the receiver. Instead, it only means that the receiver's interpretation of the signal does not relate to the true nature of the signaller's qualities. Accordingly, not only the intention of the signaller but also the quality of the signal influences the reliability of the signal. Therefore, a mere calculation of anticipated gains and deterrents can only give insights about a signaller's motivation to deceive, not about the overall reliability of a signal (Waciewicz & Zywicki, 2012).

In the previous chapter, I have discussed truster-specific and trustee-specific antecedents. Truster-specific antecedents lie outside of the scope of signalling theory, but trustee-specific antecedents can be very well studied through the lens of signalling theory. As I have mentioned before, there is a vast range of antecedents that may have a major impact on users' trust, among them interpersonal cues, trust seals, third-party reputation information, and usability. All of these antecedents are signals that website providers use in order to imply trustworthiness – sometimes as consciously sent signals and sometimes as by-products. The general approach of studies on online trust is to measure whether or not users trust in a website or service. The application of signalling theory to the same issue raises an additional question: Are those signals that users rely on actually reliable signals? Essentially, signalling theory allows us to view the formation of trust as an interaction or communication between two parties instead of a one-sided reaction. Signalling theory allows us to see online trust as an interaction that is likely to change dynamically over time until a reliable set of trust signals is established. The formation of trust online is, therefore, an evolutionary act in which website providers and users become players of a repeated trust game.

### **Criticism of Signalling Theory**

Despite the outlined potential of signalling theory to shed light on certain aspects of the interaction of eHealth providers and users, there are a number of shortcomings. First and foremost, signalling theory has been used in various fields to explain empirical findings although it is questionable whether signalling is really the best explanation or if the phenomenon might as well be explained by another underlying logic. This can be highlighted by the usage of signalling theory in the field of education and human resources. Researchers

have claimed that signalling theory illustrates that university degrees signal an applicant's suitability for a job. The implicit assumption is that the signal (i.e. university degree) is what makes an employer hire an employee rather than the actual level of skill and expertise. However, other researchers have used the theory of human capital to explain the same phenomenon. Human capital theory says that increased skills and knowledge determine a person's economic success (opposed to the mere certification) (Page, 2010). To conclude, this means that it is tempting to use signalling theory as an easy way to explain a phenomenon, whereas it may be appropriate to explore alternative perspectives that may be as valid.

Another criticism is that signalling theory stems from evolutionary biology and is highlighting phenomena that emerged over centuries of natural selection. Signal reliability is given because time and time again the fittest peacock had the largest and most colourful tail. It is undisputable that humans' usage of status symbols resembles the pomposity of the peacock. And it is certainly plausible that the usage of status symbols increases a human's potential to find a mate. Yet, as it is obvious from the difference in developmental timeframe, one cannot conclude that the rapidly changing symbols that humans employ to signpost their status have the same signal reliability as evolutionary evolved signals.

## **Conclusions and Research Questions**

In the following chapter, I would like to summarise main insights from the literature and pinpoint areas that need further investigations. I will conclude with research questions for this dissertation that set the agenda for the empirical studies I conducted.

Since trust impacts on many aspects of private and public life, it has been studied by researchers from various academic backgrounds. Philosophers, sociologists, economists, and psychologists have developed a variety of definitions of trust and approaches to conceptualise and measure it. The definition that I have chosen as the working definition of trust for this dissertation is one that is widely accepted. It says that "trust is a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behaviour of another" (Rousseau et al., 1998). With regards to further conceptualisations, studies have proven again and again that trust is built on three main

pillars: the belief that the trustee has integrity, benevolence, and the ability (or competence) to fulfil his promise (Colquitt et al., 2007).

Whether a trusting relationship emerges depends on a number of antecedents. On the one hand, there are environmental antecedents such as structural reassurance (Hardin, 1996). On the other hand, there are antecedents related to both involved parties. Truster-specific antecedents are for example the truster's personality and his previous experiences (Rotter, 1980). Trustee-specific antecedents are any features that signalise his ability, benevolence, and integrity. This could be his reputation or certifications (Fuller et al., 2007).

Trust in the online world functions essentially the same way as trust in the offline world, just that the signals that trusters have available differ vastly from the signals that they would have available in face-to-face interactions. Studies confirm that certain truster-specific antecedents play a role for trust in the online world as well as offline (Gefen, 2000). Regarding trustee-specific antecedents, a larger number of different features was found to influence trust: interpersonal cues, usability, trust seals, third-party reputation information, and a number of hygiene factors (Cheshire, 2011; Fogg, Marshall, Laraki, et al., 2001; Jenkins et al., 2003).

Studies that analyse trust regarding eHealth services are scarce. Those that exist show results that partly overlap with studies on e-commerce and other online services, but many open questions remain. Especially looking at the fact that eHealth services differ vastly in terms of risk related to them, it becomes clear that further work to clarify the relationship between service risk level and trust in the particular service is needed. What is more, studies rarely take into consideration the discrepancy between different national healthcare systems and the impact on trust in eHealth services for individual nations.

Furthermore, there is a considerable difference in the antecedents that increased trust in e-commerce websites and antecedents that were found to increase trust in eHealth services. Especially interpersonal cues and social presence were not mentioned in the literature on eHealth services, whereas these factors have been shown to impact on trust in e-commerce. It remains the question whether this is due to conceptual errors (e.g. social presence was not included as a factor in eHealth focused studies) or because it does not influence trust in the eHealth domain. It is also unclear whether trust emerges intuitively or if users rationally

weigh arguments to decide about trustworthiness. The same question holds true for third-party reputation information and partly for trust seals.

Lastly, existing literature on both online trust in general and trust in eHealth in particular has taken a one-directional perspective on trust formation. Signalling theory offers a framework through which trust can be analysed as a form of dynamic interaction, which holds the potential of entirely new perspectives on the reliability of trustee-specific antecedents as trust signals that evolve over time.

These considerations lead me to the following set of research questions:

- 1) Does risk perception vary amongst different eHealth services and if yes, is there a direct correlation between risk perception and trust?*
- 2) Which aspects of people's trust perception may be influenced by culture? Specifically, how does the trust-related reasoning of German study participants differ from existing findings in the field of eHealth related HCI?*
- 3) Which are the most influential trustee-specific trust antecedents with regards to eHealth services?*
- 4) What does the application of signalling theory as an analytical framework tell us about the reliability of various eHealth-related trust signals?*
- 5) How do users evaluate trustworthiness? Is it a rational decision or an intuitive decision?*

# Methodology – Overall Research Design and Exploratory Studies

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As mentioned in the introduction, the empirical research of this thesis has been divided into two consecutive steps. First, two exploratory, qualitative studies were conducted in order to gain a deeper understanding of the subject matter. As my proposed conceptualisation of trust is that of a bi-directional and evolving relationship, I have conducted in-depth contextual inquiries with users of eHealth services as well as interviews with providers of these services. These studies allowed me to further refine my research questions and hypotheses, which I then confirmed through a quantitative online experiment.

This chapter will provide the reader with a general overview of my methodological approach as well as a description of the design of the two exploratory studies. The design of the confirmatory, quantitative study will be presented in a separate chapter after the results of the exploratory studies.

## **Empirical Setting**

Any good research design is guided by the question: What are the best methods to answer my research question(s)? And what is the underlying philosophical stance towards knowledge generation? The answer depends, on the one hand, upon the research questions. Yet on the other hand, the existing literature has an impact on the choice of methods as well. One key choice that a researcher needs to take is the choice between qualitative and quantitative methods.

## **Qualitative and Quantitative Research**

Generally speaking, quantitative methods usually employ a deductive approach, meaning that they test existing theories and hypothesis. In other words, they tend to be confirmatory rather than exploratory. Qualitative methods tend to take an inductive approach, meaning new theory emerges from the data. Thus, qualitative methods tend to be more exploratory than quantitative methods (Pinto, 2012). It should be noted though that despite of this binary textbook definition of qualitative and quantitative methods, actual study designs may not stick entirely to the described logic. Even predominantly inductive qualitative studies may



draw from existing theory and deductive quantitative methods may lead to the formulation of new theories. What is more, many study designs may incorporate mixed elements, such as a free-text comment section in an otherwise quantitative survey.

As outlined in the literature, there are numerous studies that focus on trust related to online services. Studies that specifically analyse the relationship between trust and eHealth, in contrast, are scarce. Whilst it would be possible to use a more confirmatory approach by taking research models and theories from more general studies on trust and conduct a quantitative study of trust related to eHealth, this bears potential risks. Certain aspects, such as the relationship between doctor and patient as well as health risk, differentiate eHealth from other online services. A purely quantitative study lacks the potential to discover any additional aspects that may be unique to trust in the eHealth sector. Therefore, it appears reasonable to include an exploratory, qualitative part in the overall research design.

Qualitative studies use comparatively small sample sizes and are not the method of choice when it comes to proving correlations though. Research question 1) and 3) are research questions that aim at proving correlations. From this perspective, the obvious choice with regards to quantitative versus qualitative methods would be to conduct a qualitative study to explore online trust aspects unique to eHealth and, secondly, conduct a quantitative study to test assumed correlations. This approach is called mixed methods approach. It is, however, an approach that led to tension between qualitative and quantitative researchers. The reason is that both have a very different fundamental assumption about the generation of knowledge which will be explained in the next section.

### **Positivism, Constructivism, and Pragmatism**

To what extent do the philosophical assumptions with respect to knowledge generation differ between qualitative and quantitative researchers? Quantitative researchers tend to have a positivist stance which means they believe an objective reality exists that it can be quantitatively measured and generalised. Positivism in its pure form relies predominantly on numbers and statistical probability as a means to capture universally applicable laws and causalities, which lays on the prerequisite assumption that there is one true reality. The role of the research is to remain an independent and entirely neutral observer (Staller, 2012). Positivist researchers assume that social phenomena can be studied in the same objective and neutral way in which natural scientists approach research (Mertens, 2005).

A major criticism of positivism is that the assumption that it is possible to collect data in an entirely neutral and independent way can be challenged. On the one hand, it has been shown time and time again that human beings adapt their behaviour when they know they are being observed. A good example are the Hawthorn Experiments that clearly showed that factory workers increased their productivity when researchers were present at the factory although they were not asked to do so. On the other hand, researchers indirectly impact the neutrality of their studies through the selection of the data collection method and sample. An example for this is the impact of placement of sensors when measuring temperatures of a certain place. The placement decision that the researcher takes will impact on the measurements, which demonstrates how difficult it is to collect any truly unbiased data (Introna & Whitley, 2000). Some of these criticisms have been addressed by postpositivist researchers, who essentially have taken up a “milder” form of positivism by stating that since humans are not entirely objective, human researchers can only discover reality within a certain degree of probability. In other words, a theory cannot be “proven” in the true sense of the word, but less appropriate explanations of reality can be eliminated (Mertens, 2005).

In stark contrast, many qualitative researchers take a constructivist stance on knowledge generation and believe that reality is a social construct and that any knowledge that we take for granted needs to be critically questioned with regards to historical and cultural specificities. Further, constructivism acknowledges the role of the researcher as part of the knowledge generation and, thus, emphasises the inescapable subjectivity of research findings. (Staller, 2012).

The topic of mixed methods was a heated topic because it implies that two entirely opposing understandings of reality need to be combined. Especially since the 1990ies, a new paradigm called pragmatism evolved. Pragmatism solves the philosophical clash between positivism and constructivism by focussing on what works and thus breaks down the apparent dichotomy between constructivism and positivism. It acknowledges that both qualitative and quantitative methods of data collection lead to valuable insights whilst remaining conscious of the limitations of each approach. Many pragmatist researchers would employ methods in accordance to the logical requirements of various stages of their research and identify at which stage a more exploratory/constructivist or confirmatory/positivist approach is more sensible (Pinto, 2012). What is more, in terms of their philosophical paradigm of reality, pragmatists take the position that there is one objective reality, which is similar to the

positivist paradigm, However, pragmatists highlight that nevertheless every individual has their unique experience and interpretation of reality, which resembles the position of constructivists and emphasises the importance to take subjective perceptions of reality seriously, especially in the realms of social scientific research (Mertens, 2005). Looking at the requirements related to the aims of this dissertation, the most fitting approach is a mixed method approach with a pragmatist view regarding ontology and epistemology.

### **Basic Research and Applied Research**

I would now like to position this study on the continuum between applied research and basic research. Historically, social psychology was aiming to copy research methods from hard sciences such as physics in order to arrive at pure and objective results. Over the past century, more and more researchers have adopted approaches that are focussed on the solution of practical real-world problems instead of the creation of theories. This approach is called applied research. In addition to the different motivations behind basic research and applied research, there are a number of key differences amongst these approaches. Basic research is generally conducted in isolated settings such as labs in order to analyse specific behaviours free from unpredictable influences. Applied research, on the other hand, is usually conducted in the field or in settings that imitate real-world conditions. Also, basic research is heavily relying on existing theory, whilst applied research is looking at conditions that are relevant to people in the real world. (Brodsky & Welsh, 2011)

Whilst some researchers see applied research and basic research as a dichotomy, others agree that it should be rather seen as a scale. I will agree with the later. The present dissertation is clearly analysing questions that are of high relevance for the real world. Both technology companies and policymakers can benefit from studies like this. At the same time, I considered relevant theories, such as signalling theory, when I designed the research. The same holds true for the choice of methods: Contextual inquiries and expert interviews are methods that a user researcher in a technology company might employ as well. An online experiment, at first sight, is similar to basic research methods. It is, however, important to note that the online experiment essentially mimicked an online interaction with eHealth companies. Therefore, this study shares attributes with both research approaches. Also, the analysis of the data was done with greater rigour than one would expect from a study conducted by industry practitioners. In the bottom line, it is safe to say that this dissertation leans towards applied research rather than basic research.

I would like to conclude by saying that especially under the consideration that applied research wants to solve real-world problems, it is reasonable to take a mixed methods approach despite concerns from extreme positivist or extreme constructivist camps. A pragmatist approach is the most fitting approach for this study.

## **Summary**

I would like to conclude this chapter by saying that the positioning of this thesis in the broader empirical setting of social scientific research is to some extent an ideological decision. The mentioned approaches and philosophical stances resemble broader societal worldviews. We do not have an answer to the question whether there is an objective reality or whether there is no such thing and all reality is a social construct. As long as this question has not been answered, the ontological and epistemological choices of a researcher remain subject to the researcher's gut feeling, no matter how neatly one makes the case for any of the available paradigms. From my personal standpoint, it seems most reasonable to assume that "one" objective reality exists, but that as humans we will never be able to fully grasp this reality since we are so heavily impacted by our own conditioning. This assumption is in line with pragmatist thinking. Further, I see the value of both qualitative and quantitative methods, whilst I do understand the limitations of each of them, which I have outlined above. Looking at the aims of my thesis, I believe that it will be most fruitful to conduct exploratory qualitative research to generate hypothesis that go beyond findings of previous researchers and then to test those in a confirmatory, quantitative study that also incorporates existing theories.

## **Research Design**

### **Overall Research Design**

In the previous section, I have outlined the positioning of this thesis within the empirical setting. I have explained that I will use qualitative methods to generate insights in an exploratory fashion and then test those by employing a quantitative study. That means that the overall research design consists of two stages, an exploratory and a confirmatory stage. In terms of structure of the research report, I will divert from the standard structure of a thesis that consists of introduction, literature review, methods, analysis, discussion, and conclusion in the sense that I will conduct two "rounds" of research that follow a logical, consecutive order. I will first describe the methodology and analysis of the exploratory,

qualitative studies, and provide an interim discussion. Subsequently, I will elaborate on the confirmatory, quantitative study. The chapters need to be separate because the hypotheses of the quantitative section are largely based on the findings of the qualitative section.

### **Research Design of Exploratory Studies**

The next step is the choice of one or several qualitative methods. Qualitative methods can be roughly categorised under interview-based methods, observational methods, and methods relying on documents and artefacts. One aspect that this study aims to cover is to analyse trust through the lens of signalling theory. That means that both the view of users and the view of eHealth providers need to be covered.

Regarding eHealth providers, in-depth expert interviews were my method of choice. The goal was to understand their reasoning behind web design and marketing to see whether there is a match between the signals they send to users and the conclusions users draw from these signals. Neither observational methods nor artefact / archive-based methods would be a good fit for this endeavour because the focus lies on opinions and not on observable behaviours or documents historical facts. In-depth interviews enable a detailed discussion and hence fit the objective very well.

Regarding users, both their opinions and their behaviours were of interest. I conducted contextual inquiries. This method is not a standard method in classical social psychology research, but it originates in applied user research. It borrows from observational methods as well as from interviews. Usually, users are asked to perform a certain task on the computer (or another digital device), whilst the researcher observes their actions (Beyer & Holtzblatt, 1997). In many cases, participants are asked to say out loud any thought that comes up throughout the contextual inquiry, which is also called think-aloud-protocol (Hevey, 2012). Contextual inquiries often also include short to medium length interviews. Overall, contextual inquiries combine observational methods and interviews in a way that is suitable for the environment of digital applications. One criticism that think-aloud methods sometimes receive is that speaking about one's actions makes participants more self-conscious and may change their behaviour (Hevey, 2012). The usage of eHealth website is not related to any major moral judgements, which means the risk of self-censorship is small.

Most eHealth companies (like other online business) track and analyse traffic on their websites with tools such as Google Analytics. This kind of data would have also been of interest for this study. It was, however, not feasible to get access to such data sets.

The quantitative study is mainly based on an online experiment. I will discuss further details in the separate chapter on quantitative methods, after the analysis of the qualitative study because the qualitative study was used to refine specific hypotheses for the quantitative study.

## **Ethical Considerations and Informed Consent**

All studies that involve human subjects need to follow rigorous ethical guidelines to ensure that the physical and mental wellbeing of the participants is not at risk (Owens, 2012). Since my studies did not involve any activities that can possibly cause harm to the human body, I mainly focussed on the risks that concern the mental wellbeing of my participants.

With regards to the expert interviews, the questions I asked evolved around their professional experience. Therefore, the risk that the question violates participants' sense of privacy or the risk of reminding them of traumatic experiences was very low. The main risk that I anticipated was that some of my questions relate to information that the participants' companies do not want to be associated with in the public. In order to avoid any stressful situation for the participants, I emphasised that they can withdraw from questions that they do not want to answer and I explained to them that their data will be used in an anonymised way.

Concerning the contextual inquiries, I anticipated a small risk that the health scenarios might cause stress in the participants if the participant has previously suffered from the described illness himself. I informed participants that there is the possibility of skipping individual scenarios in case they do not feel comfortable about the tasks. This did not happen in any of the inquiries. On the contrary, participants seemed pleasantly surprised when they were personally affected by a given health scenario because in this case, they learnt more about available services. What is more, several health websites that the participants were supposed to use during the sessions asked for health data. I highlighted that there is no need to provide true personal health data on those websites.

The quantitative study was similar to the contextual inquiries regarding potential risks. In this case, too, participants were informed prior to starting the survey that the survey is voluntary, and they can withdraw at any point. Here too, it was emphasised that there is no need to provide personal health-related data.

Apart from the specific risks mentioned above, it is crucial to inform participants prior to the study about the research project to enable the participants to take an informed decision about their participation (Owens, 2012). Therefore, I prepared an informed consent sheet for each of the studies that contained information on the duration of the study, the aim of the research project, the involved researchers, methods of data recording, anonymization, and selection criteria. The full version of the informed consent sheets can be found in the appendix. Each participant was given sufficient time to read the form, was encouraged to ask questions where needed, and afterwards was asked to sign the form. In the survey-based study, people were provided with my email address to ask questions if needed. In those cases where I communicated with participants via email, I sent out the informed consent form even before the meeting.

## **Data Handling of Exploratory Studies**

### **Recording and Transcription**

All sessions have been audio recorded. All the audio files have been transcribed. I have transcribed around half of the interviews myself. I have proofread each document after an initial transcript had been completed. Since around half of the audio files have been transcribed by a professional transcription service, there are some minor differences in the format of the transcripts. The transcription service has added time-stamps after each paragraph, which I have not done. These differences did not influence the analysis of the data.

The final contextual inquiry transcripts have been anonymised by replacing the participant names with aliases in the form of P1, P2 and so forth. The names of the expert interview participants and their companies have been replaced by E1, E2 and C1, C2 respectively. All other mentioned names such as names of friends or competitors have been replaced by

random names. I kept information regarding the location and the date of the sessions in the interview transcripts.

In addition to the audio recording, I saved the URL history of the contextual inquiries. This enabled me to analyse the specific website content that people have referred to during the sessions. The contextual inquiries were conducted on a separate user account on my laptop, so the URL history could be saved by taking screenshots of particular days on which the sessions have been conducted. These screenshots were then named according to the participant's alias.

### **Data Storage**

Both the contextual inquiries and the interviews were recorded with an audio recorder. Since audio recorders have an elevated risk of being lost or stolen, I transferred the audio files to my password protected laptop straight after the sessions. The only parties who had access to the files were employees of the transcription service that I have used. In order to maintain a high level of data security, a confidentiality contract was signed with this company. As mentioned above, the transcripts were all anonymised with a particular anonymisation scheme. The anonymised transcripts were saved together with the audio files on my password protected laptop. Backup copies of all files were kept on a password protected external hard drive.

## **Contextual Inquiries**

### **Sample Selection**

Traditionally, quantitative research aims for representativeness. A sample is selected in such a way that the conclusions of the study can be generalised to a much broader audience. Quantitative samples are, therefore, often randomised samples. Qualitative research, on the other hand, does not primarily aim at results that are generalisable. In most cases, the aim is to gain a deeper understanding of attitudes or behaviours of purposively elected groups of society. (Rapley, 2013)

The main elements of the contextual inquiries I undertook were think-aloud protocols, interviews, and observations. Accordingly, the tools would be classified as qualitative methods. The sampling strategy falls under the category “maximum variation sampling”



(Staller, 2012), the purpose was to include a diverse pool of participants in order to explore the breadth and depth of trust evaluation strategies of people. In other words, my aim was to capture a wide range of strategies on how people make sense of the information they find about eHealth companies. In previous studies, factors such as age and experience with online media have been found to influence how people interact with eHealth technologies. Therefore, I decided to cover a broad range of demographics. In terms of age, I recruited participants between 22 and 74 years of age. The age distribution is slightly skewed as six out of 18 participants are below the age of 30. This is mainly due to my sampling method, which will be explained in the following section. I conducted the contextual inquiries in Germany's capital Berlin and in two rural towns called Halver and Luedenscheid. This allowed me to apprehend both the views of urban and rural populations. Lastly, my sample covered different occupations and levels of education. Several participants held degrees such as medical doctor and tax accountant, whereas other participants pursued occupations such as yoga teacher and cosmetician that do not require any university education.

Despite my purposely open inclusion criteria, I introduced a number of exclusion criteria. This study is focused on the German healthcare market. Since healthcare systems vary vastly from country to country, I hypothesised that people's approach to evaluating healthcare systems would differ depending on their permanent country of residence. Accordingly, I only recruited participants that have their current place of residence in Germany. What is more, only fluent German speakers were accepted because many of the tested websites were in German. For ethical reasons, people under age and people with neurological and psychiatric disorders were excluded as well.

In terms of sample size, there are two popular approaches. In quantitative studies, researchers often apply statistical power analysis to determine how many participants they would need to test a certain effect. This means that the number of participants is determined before the data is analysed. Qualitative researchers, especially those who apply grounded theory, tend to recruit initially a very small sample and then conduct a preliminary analysis. Additional participants are then recruited until a saturation point is reached and a theory can be formulated (Rapley, 2013). Personally, I set a particular target in terms of demographics. As explained earlier, my goal was to cover different age groups, education levels, genders and urbanisation levels. Once I covered each of those dimensions, I was satisfied with my

sample. In total, I recruited 18 participants. A detailed overview can be found in the appendix.

Although the possible sample size of a study based on contextual inquiries cannot yield results that will be generalizable for the entire population, the described sampling strategy allowed me to collect a multifaceted data set.

### **Sample Recruitment**

As mentioned in the previous section, my intention was to recruit a broad range of participants from different backgrounds. The first strategy that I adopted was recruitment through flyers. I printed flyers in which I briefly explained my study and provided my email address and telephone number. Those flyers were distributed in 30 cafes and supermarkets in different parts of Berlin with the aim to find participants with a variety of different backgrounds. Unfortunately, not a single person replied to those flyers. The reason might be that there was no sufficient incentive for people to participate. This is different in settings where this method is successfully applied. Studies that rely on university students can incentivise those students with small financial gifts and in clinical studies, many participants are affected by the studied diseases and hope to contribute to the advancements of therapies.

Subsequently, I opted for snowball sampling and asked friends, family, and acquaintances to recommend potential participants and to introduce them to me. This strategy proved successful. The initial communication with the participants took place via the phone, Facebook messages, and via emails. In each case, I introduced myself and my study and offered the participants to send them the informed consent form prior to the study.

### **Procedures**

As mentioned in the introduction of contextual inquiries, it is beneficial to conduct these studies in a setting that is familiar to the participant. Therefore, most of the interviews were conducted at the participants' home or workplace. In two cases, the interviews were conducted at my office because the location was convenient to reach for the participants and they preferred to conduct the interview not at their home.

At each contextual inquiry, I would explain the study in greater detail, clarify participants' questions and ask them to sign the informed consent form. I highlighted that the study is

voluntary and that it can be terminated at any point. Furthermore, I emphasised that it is not required to submit any personal health data to any of the tested websites. I also explained what is expected of the participant during a think-aloud protocol. What is more, I asked participants to inform me in case they had already used any of the websites that were tested during the session. Thereafter, I set up the computer for the contextual inquiry.

Although it would have been preferable to use the participants' own computer for the study, the study had to be conducted on my computer. The reason is that I saved the URL history of the sessions in order to analyse how participants have navigated through the websites. For data protection reasons, it was not possible to save that type of files from a participant's computer. The disadvantage of using my computer was the risk of decreased ability to concentrate on the study tasks. People only have limited cognitive capabilities and it has been found that dealing with anything unfamiliar increases the cognitive load and hence impacts on the ability to focus (D Gefen et al., 2003). This theory has partly been confirmed during my study. One participant, for example, was not able to find the @ sign and another participant was confused by the default search engine of my browser. All the observed problems were minor and did not lead to greater confusion or a significant interruption of the inquiries.

## **Tasks**

Prior to the contextual inquiries, I had prepared cards with descriptions of health-related scenarios and related tasks. One of the health scenarios, for example, was a planned holiday to Kenya and the need to order Malaria prophylaxis and another health scenario was the need to find out the pharmacological interaction between two medicines. The corresponding tasks were to find out more about a particular online pharmacy and a medical online lexicon and decide whether or not the service would be used. I emphasised that participants may use a variety of different sources including online magazines, forums, and social media to gather information about the companies in question. I asked the participants to conduct the search as they would do without my presence. I did not set a particular time limit for the tasks, as I expected that users would need varying amounts of time to reach a conclusion about the service in question. The number of scenarios per session settled naturally at four to five as a result of available time and participants' concentration span. The sessions lasted between 37:58 and 64:28 minutes.

## **Interviews**

Besides think-aloud protocols, I conducted two types of interviews with the participants. The first type was a number of short questions that I asked after each individual health scenario that participants had finished. The questions asked concerned the conclusions regarding the trustworthiness of the analysed service. After the participants finished all of the health scenarios, I conducted the second type of interview. This type included questions regarding previous experiences with eHealth and demographic data. The questions on previous experiences were of interest to me to be able to interpret potential peculiarities in the participants' interactions with eHealth services. I consciously decided to conduct these interviews after the completion of all tasks because I wanted to avoid any priming on the participants.

## **Selection of Test Companies**

In total, 17 different companies were used for the health scenario cards. Those companies were selected under consideration of a number of different criteria. Similar to the selection criteria of participants, my selection criteria for companies were supposed to allow me a broad range of insights. Overall, I aimed to address several ongoing scientific debates related to trust. As it will be explained in greater detail in the following paragraphs, these debates mainly concern the impact of design, human interaction, and the relationship between risk and trust.

First of all, I aimed for variety in terms of the risk related to the usage of the companies. On some of the websites, it is necessary to submit health data and on others, it is necessary to submit payment data. These websites can be seen as high-risk websites. On other websites, no data has to be submitted. The risk related to those websites is mainly the credibility of the information they provide and, therefore, it is a lower risk than that of those mentioned previously. I was interested in different risk levels because risk is directly related to the need for trust and potentially different trust evaluation strategies.

Secondly, I selected websites with a different level of personal interaction with medical professionals. On some websites, it is possible to interact with doctors via email or even video conference, whereas there is no interaction with doctors at all on other websites. The reason why I was interested in different levels of doctor-patient interactions was that there is a debate whether or not people only trust other people or whether they also trust in technology itself (see for example Friedman, 1995; Nass & Moon, 2000). I hoped to gain insights into this question through this method.

Thirdly, intended to cover several health concerns such as Diabetes, pharmacological interactions, and tinnitus. This choice was guided by the attempt to avoid that participants only work on tasks that are either very familiar or very unfamiliar to them.

Fourthly, I was interested in the impact of design on perceived trustworthiness. Therefore, I included both websites with modern design and websites with outdated design. In addition, I consciously included two websites that have a very low usability in contrast to others with sufficient usability.

I found the companies by using a search engine. The keywords I used were for example “diabetes management tool” and “medical second opinion online”. Since my study is focussed on the German market, I only included websites that are operating in the German market and that offer a German version of their website. I first selected the companies and then I wrote the tasks in such a way that the participants would be able to find information on the presented health scenario on the respective website. As I included several companies of the same type, such as two different pharmacy and advice services, I used the same scenario description for those companies. In these cases, I made sure that each participant works on only one of the identical tasks. A detailed list of the selected companies can be found in the appendix.

## **Pilot Study and Adjustments**

In order to find the ideal study design, I conducted six pilot sessions. These pilot sessions enabled me to clarify the following questions:

*1. Should the health scenarios be linked to one particular company that can potentially solve the scenario or should participants be allowed to conduct an entirely free online search for suitable eHealth services?*

*2. Should additional questions on each tested website be asked immediately after testing the website or shall additional questions be asked after all tests are terminated?*

*3. Are the chosen scenarios insightful in terms of understanding how people evaluate the trustworthiness of medical services?*

*4. Are any changes of the interview questions required?*

During those six pilot sessions, I tested several setups. In two of the sessions, I gave participants the freedom to search freely for suitable eHealth services. Although this trial resulted in interesting insights regarding the search engine usage of participants, it had two key downsides. First of all, participants would mainly spend time on very general information portals or user forums. Therefore, it was not possible to draw conclusions about their preferences regarding eHealth providers. Secondly, the number of visited websites was considerably higher and the length of stay on each page was shorter. This would have made it impossible to compare the view of different participants on the same eHealth service with each other. Hence, I decided to ask participants to evaluate a particular service provider for each health scenario.

The second setup that was tested was the order of testing sessions and interview questions. In three cases, I asked all questions related to the participants' evaluation of a particular website only after all four to five health scenarios were tested. The aim was to allow participants to stay in their think-aloud protocol mode. Unfortunately, the participants that were asked the questions at the end of the entire session instead of after each health scenario were able to recall much less and their opinion was less specific than that of participants that

were asked directly after testing the website. Accordingly, I proceeded to ask participants a few questions straight after they finished carrying out a particular task.

Regarding the third question, I found that people paid more attention to trustworthiness when a certain level of risk is involved in the service. My participants searched, for example, longer for trust indicators on medical travel websites than on information portals. As a result, I added a number of additional health scenarios that involve an increased level of risk.

Concerning the last point, I made two particular changes. I noticed that people describe the trustworthiness of websites in very broad terms such as quite trustworthy or very trustworthy. Therefore, I introduced a question where participants have to assign a numerical evaluation between one (not trustworthy) and ten (fully trustworthy) to the tested websites. What is more, I added a question where participants need to sort all tested websites according to their trustworthiness. These two additional questions allowed me to gain a deeper understanding of the participants' perceived trustworthiness of the websites.

Since all the pilot sessions yielded insightful results, I combined them with the main contextual inquiries when I conducted my analysis. After the pilot study, I conducted another twelve contextual inquiries. All in all, my analysis was, therefore, based on 18 contextual inquiries.

### **Difficulties**

Despite careful planning and execution of the contextual inquiries, I encountered several difficulties during the interviews. The first difficulty was posed by the location of the interviews. Since most of the interviews were conducted at the participants' homes, I had little control over the environment. Where possible, I asked to use an undisturbed room for the interviews, but in several cases, the interview had to be carried out in rooms that were frequented by other inhabitants of the homes. In two cases, the spouse of my participants entered the room at some stage and interrupted the interview. In those cases, I kindly asked the spouses not to disturb the interview, as it is being recorded for research purposes. In two other cases, another person walked into the room but did not speak to the participant. In those cases, the interview was not disrupted, but the attention of the participants might have been distracted.

In addition to the problem caused by the location, some participants had the tendency to ask me for advice during the web search or whilst searching for specific content on the eHealth websites. I decided to answer their questions as long as they were related to technical issues such as the functions of my laptop. Whenever participants asked for information about the eHealth service, I encouraged them to search this information on their own as this is part of my research interest.

Lastly, several participants avoided my question on the numerical value between one and ten that represents how much they trust in the tested website. Instead, they would give lengthy explanations related to the website's trustworthiness. In those cases, I would prompt them one more time to speak about the topic in a quantitative way. If the person would continue to answer this question in an avoiding way, I accepted this to maintain the positive atmosphere of the interview and not to make the participant feel bad about their answer.

## **Expert Interviews**

### **Sample Selection**

I applied a classical qualitative sample selection for the expert interviews. After developing my research questions, I developed specific inclusion and exclusion criteria which I applied for the selection of my participants.

Since my aim was to learn about experts' views on fostering users' trust, the main inclusion criterion was their experience in the eHealth domain. In the eHealth domain, it is slightly complicated to define the term "experience". In many other domains, experience can be defined by years of experience. Most of the services that I was interested in have only emerged in the last few years. What is more, several participants had many years of experience in the relevant task (e.g. User Research) but moved from a different sector to eHealth later in their career. Therefore, my definition of experience was less focussed on the amount of time the expert has in the eHealth domain. I mainly selected participants according to their involvement in the development of the most innovative technologies.

With regards to the domain of their expertise, I selected participants according to the relevance of their tasks to build the users' trust. Initially, my plan was to select predominantly designers because I assumed that they have the greatest knowledge about



trust signals. Once I contacted a number of eHealth companies, it became clear that in their eyes, it is not primarily the designers who influence users' trust. They advised me to speak to marketers and user experience researchers as well. What is more, I discovered that many companies outsource a number of trust related tasks. Therefore, I also decided to interview two experts of advertising companies.

Another important decision was the type of eHealth companies that I would recruit experts from. The inclusion criteria for the companies were very similar to the inclusion criteria of the companies that I selected for the health scenarios that I used in the contextual inquiries. The companies had to operate in the eHealth domain and they had to operate in the German market.

I accepted several different specialisations such as a hearing test app and a medical travel website. The inclusion criterion was that the companies had to offer products or services related to disease management or treatment. Companies that are based in the fitness or healthy nutrition domain were not accepted.

Despite the companies' focus on the German market, two participants were non-German and not fluent in German. I accepted them as participants because both of them were designers and mainly in charge of visual aspects of the websites. Therefore, I concluded that a lack of the German language would not indicate a lack of expertise in their domains.

The variety in the selected eHealth companies was also reflected in their size and age. Whilst the hearing test app was founded only a few years ago and employed around 20 employees, I also interviewed an employee of an established pharmaceutical company because this company nowadays offers several digital products in addition to their traditional product range.

In many qualitative studies, age and gender of the participants play a major role. These two factors were not important in my case. Both the minimal and maximal age were regulated by the requirement of expertise in the eHealth domain. My youngest participant was 27 years of age and he had eight years of experience as a web designer. The oldest participant was 50 years old. He held 30 years of experience in the advertising industry and had a special focus

on the digitisation of previously offline-based business models. I interviewed five female and six male participants.

The number of participants was guided by the attempt to reach a saturation point of needed insights. After I had discovered that several in-house departments and external service providers are involved in trust-fostering activities, I aimed to speak to at least one person who is an expert in each of these domains. These are the domains: marketing, user experience research, web design, product development, communications, and sales. A detailed list of all participants can be found in the appendix.

### **Sample recruitment**

I started the sample recruitment with an online search. I used keywords such as “diabetes management”, “medical travel”, and “medical second opinion”. I saved all companies that I could find on the first pages of the search engine to my bookmarks. Thereafter, I analysed each of the companies in greater depth and excluded all companies that did not match my selection criteria. I then created an excel spreadsheet with all suitable companies and their contact details. I contacted the companies via official channels such as their support email address and LinkedIn. I contacted around ten companies at a time and continued this procedure until I finally reached a sufficient number of participants.

I used almost the same introduction email for all companies. I made small changes to incorporate particular information like how I found out about the company or person. I briefly introduced myself and my research project and I attached the informed consent sheet. I then asked them to refer me to a member of staff that would be suitable for my project. Once a suitable participant was found, I agreed on a time and date for the interview with the participant.

As previously mentioned, I soon learned that in many cases companies outsource some tasks that are related to establishing trust. Therefore, I repeated a similar company search for advertising companies that have previously conducted projects that are focused on healthcare.

## **Procedures**

I offered the participants to conduct the study at a place of their convenience. I was based in Berlin for the duration of the fieldwork and, fortunately, the clear majority of eHealth companies are based in Berlin as well. In all cases except for one, the sessions were carried out at the participants' offices. In one case, the interview was conducted via Skype because the participant was based in Munich and a personal meeting was impossible. All interviews were carried out in separate meeting rooms, which enabled the participants to speak freely about their views.

Before each interview, I explained my research project and gave participants the option to ask questions. Once all questions were answered, the participants were asked to sign the informed consent form. The interviews lasted between 36:31 minutes and 1:38:30 hour.

## **Content of the Interviews**

I conducted the interviews in a semi-structured interview style. That means that the topic guide was not used in the fashion of a structured questionnaire, but it was used as a list of suitable themes to be covered and prompts to encourage the participant to elaborate on these themes. Since the participants came from a variety of professional focusses, I adapted the interview guide to each interview by excluding unfitting topics and putting increased emphasis on the area of expertise of the particular interviewee.

I used a topic guide for the interviews that was structured around findings from the literature. The paper that influenced the topic guide most was Wang & Emurian (2005) because this paper offers a well-structured overview of design features that may induce trust that the authors have derived from studies on individual features. The themes that I borrowed from their framework are *graphic design*, *structure design*, *content design*, and *social-cue design*. What is more, I used the participants' personal understanding of trust and aspects outside the actual website as additional themes. I took this decision because other than the study of Wang & Emurian (2005), my own study aims at understanding trust in eHealth services on a more holistic level than just trust in a particular webpage and its design.

In the following paragraph, I would like to introduce the prompts that I used in relation to each theme. The prompts related to the participants' understanding of trust included for example the role of trust in their particular sector, the difference between trustworthiness

and website usability, and the participants' approach to designing a trustworthy website or marketing campaign. These topics general laid a solid foundation for the remaining interview and helped to gain a shared understanding of the issue of trust with the participants. The next theme was structure with the related prompts *navigation* and *sequencing* of the website's modules. The third theme was "social cue design", which included usage of *photos*, *synchronous / asynchronous communication tools*, and *the affiliation with celebrities*. The prompts I used in relation to the theme "graphic design" were choice of colour and modernity of the website. Lastly, when I spoke about the theme of aspects outside the actual website, I would apply amongst others the prompts "*social media*", "*search engine optimisation*", and "*online marketing*". The full topic guide can be found in the appendix.

### **Pilot Study and Adjustments**

In order to validate my topic guide, I conducted two pilot interviews with acquaintances who are designers. Neither of them is employed in the eHealth sector in particular, but I assumed that their expertise in web design would allow me to understand whether any adjustments to my topic guide are needed. These two participants proved to be very knowledgeable with regards to fostering trust and I found their answers highly valuable. Therefore, I included those answers that are applicable across different sectors in my final analysis.

The main learning from these two pilot interviews was that one may easily confuse a discussion about trust in a service with a discussion about the usability of a website. For this reason, I included a specific question about the difference between trust and usability in all following interviews. What is more, I realised that the term "social-cue design" is not commonly used among German web designers. This made me explain the term in all following interviews. Apart from that, I was satisfied with the results of the interviews and the setup of the study.

Lastly, I realised that the discussions mainly focussed on ways of making the user believe in the trustworthiness of the company as compared to the reliability of indicators of trustworthiness. This might have been the case because designers' main goal is to convince users of trustworthiness and not to educate users about the question which trust indicators one shall trust. In order to gain a better understanding of the reliability of trust signals, I added a question on this particular issue.

## Quality Indicators of Exploratory Studies

When it comes to quantitative studies, quality indicators are relatively standardised; most researchers agree that validity, relevance, and generalisability are key indicators of scientific rigour and research quality. This perspective is grounded in the epistemological perspective of positivism (and post positivism) and the philosophical paradigm of objectivism. In this tradition, researchers essentially claim to be discovering an objective truth and, therefore, data collection needs to remain as objective as possible. (Mays & Pope, 2000)

In the realm of qualitative research methods, however, there exists a debate over applicable quality indicators. This debate essentially stems from the previously discussed epistemological perspective of constructivism which highlights that all reality is socially constructed, and the researcher unavoidably taints the findings with their subjective experience. Further, it is reasonable to assume that qualitative studies such as interviews and observations will never be replicable in the same way that quantitative studies are supposed to be replicable (Salmon, 2013). Now, the more extreme conclusion that some researchers draw is that all research perspectives are unique, and each is equally valid in its own terms. This position is, fittingly, known as extreme relativism. (Mays & Pope, 2000) However, this position means that research cannot derive any unequivocal insights, which arguably defeats the purpose of science to a certain extent.

The less extreme version of extreme relativism, also known as subtle realism, tries to find a middle ground between the approach to quality assurance that is being used in quantitative research and the rejection of standardised quality indicators that extreme relativists put forward. Subtle realists rely on the following measures to assess the validity of a study design: triangulation, respondent validation, clear exposition of methods of data collection and analysis, reflexivity, attention to negative cases, and fair dealing. Further, relevance plays an important role as a quality indicator as it determines whether the research findings either add knowledge or increase the confidence that one may have in existing knowledge. (Mays & Pope, 2000)

As I have previously positioned this dissertation within the position of pragmatism, it appears reasonable to adopt the perspective of subtle realists with regards to quality assessment. Looking at the suggested quality indicators, the exploratory studies that were

conducted as part of this research project meet most of them. First of all, triangulation is given in the sense that by conducting one study with experts and one study with participants that acted as site users, I have collected data that represents several perspectives on the same phenomenon. The level of triangulation is even expanded by the larger research design which adds a quantitative data source to further deepen the understanding of the same questions and hypotheses.

Another means of testing validity mentioned by Mays and Pope (2000) is clear exposition of methods of data collection and analysis. This refers to the level of depth and traceability of the various steps that the researcher underwent. This quality indicator is fulfilled through my extensive descriptions of methodology and analysis.

With regards to the next quality indicator, reflexivity, it is important to note the ways in which the researcher has shaped the outcomes of the research project. Some factors that certainly would have influenced the data collection are my nationality and previous experience in the eHealth domain. Nationality matters because this means I am already aware of certain peculiarities of the German healthcare sector and it is possible that a foreign researcher may have even noticed features of the healthcare sector that I did not notice because I am so familiar with it already. The same holds true with regards to previous knowledge about the eHealth sector. What is more, several participants of the contextual inquiries are part of my wider social circle, which may have impacted the participants' neutrality. Nevertheless, due to the relatively neutral topic of the research project, it is unlikely that my persona as a young female researcher would have had a major impact on the quality of the collected data.

The next quality indicator that I would like to discuss is "attention to negative cases". Overall, there has been no extreme "outlier" amongst the research participants. Both trends and variational responses have been well documented in the thematic analysis. Lastly, the quality of qualitative research can be analysed through the lens of "fair dealing" which essentially refers to the heterogeneity of research participants. This has been incorporated both in the sense that I interviewed experts as well as users and also in the sense that I have paid much attention to cover a broad range of ages and professions in the contextual inquiries.

The only quality indicator from the list of Mays and Pope (2000) that has not been considered is respondent validation. In conclusion, it is fair to say that a vast amount of quality indicators has been met in the exploratory studies of this dissertation. The quality indicators of the quantitative study will be discussed in the second methodology section.

# Analysis of Exploratory Studies

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In this chapter, I present the findings of the two exploratory studies that I have introduced in the methodology chapter. These studies examined both the perspective of eHealth users and that of eHealth providers with regards to the establishment of trust. The in-depth analysis of these two perspectives allowed me to refine the research questions and hypotheses for the subsequent quantitative study, which is explained in the following two chapters.

## Method of Analysis

The chosen method of analysis for the qualitative part of this dissertation was thematic analysis according to Attride-Stirling (2001). Thematic analysis was chosen because it simplifies the identification, analysis, and reporting of patterns / themes within the data. The strength of this type of analysis is that it provides a structured and replicable approach to the processing of textual data without neglecting the richness of its content (Braun & Clarke, 2006). The specific approach, as formulated by Attride-Stirling (2001) suggests structuring emerging themes along three different levels: global themes, organising themes, and basic themes. Global themes are the most general themes and can be seen as a heading for a group of themes. Organising themes are more specific and group basic themes logically together. As each theme is part of this order of global, organising, and basic themes, the overall result of this coding method is a network of codes.

The coding of the text can be done either inductively (by building a network of themes whilst coding), or deductively (by pre-defining themes according to a theory). In this study, a mix of both has been used. With regards to the contextual inquiry, I created two main thematic networks. One of them is structured according to Wang and Emurian's (2005) framework of trust evoking design factors and the other one is based on the three commonly accepted trust antecedents competence, benevolence, and integrity (Gefen, 2002). The network based on Wang and Emurian's (2005) will henceforth be called design network and the network based on Gefen (2002) will be called trust network. In each case, the existing framework was used deductively as a scheme for global codes, whereas basic and organising codes were created in an inductive fashion. The reasoning behind this approach was to validate that the proposed frameworks apply to the domain of eHealth and general e-commerce. Especially the



framework by Wang and Emurian (2005) lacks insights on design features that are eHealth specific. The trust antecedents competence, benevolence, and integrity have been applied to eHealth-specific studies, but it remains unclear which features lead to perceived competence, benevolence, and integrity.

Regarding the expert interviews, I applied the same coding strategy for design-related aspects, meaning I used Wang and Emurian's (2005) framework to develop global themes. Also, I derived global themes on User Research and Legal Aspects through inductive coding. These two code networks are of special importance because they allow conclusions about trustees' reasoning about adjusting the signals they send.

Overall, thematic analysis directly answered the research question "Which are the most influential trustee-specific trust antecedents with regards to eHealth services?". By gaining insights on the views of both users and experts, it was possible to analyse the data through the lens of signalling theory (RQ4). The remaining research questions were not part of the main thematic networks, but I could draw conclusions about them through additional individual codes.

I used the software ATLAS.ti for the analysis. Both the interviews that were conducted in German and those that were conducted in English were all coded with the same English coding frame. Examples of the coding can be found in the appendix. The examples in the main body of the text are all translated into English.

## **Results of Contextual Inquiries**

As mentioned above, the following sections are a report of the analysis of the textual data from 18 contextual inquiries. The first section is devoted to an analysis of major trust antecedents in the eHealth domain through the application of two existing frameworks. In the second section of the analysis of the contextual inquiries, I will present evaluation strategies that have been used by participants to make sense of the information they found about eHealth companies. The third section is a comparison of different eHealth service offers with different (perceived) risk levels and their impact on trust. Thereafter, in the fourth section, I will present an examination of truster-specific antecedents and, lastly, in the fifth section, elaborate on transaction intention

## **Discussion of Different Signals that Participants Use to Evaluate Websites**

In this section I will present the two main thematic networks. In each case, I first went through several rounds of reading and re-reading the interview transcripts and assigning basic codes to short and medium length quotations. I then assigned the basic codes to global codes and, for the last step, structured the networks further by adding organising themes. Basic themes are not unique to any thematic network, some basic themes appeared both in the trust network and in the design network because the design network assigns basic themes to the four categories of social cue design, graphic design, structure design, and content design, whereas the trust network classifies basic codes according to the conclusions about competence, integrity, and benevolence that a user can draw from them. Besides those established frameworks, I will elaborate on trust features that are not directly part of the website, but that influence trustworthiness indirectly through third parties.

### Design-perspective: Social-cue Design, Graphic Design, Content Design, Structure Design

Wang and Emurian (2005) have conducted a literature review in which they examined key publications in HCI that deal with trust. Many individual papers focus on the relationship between trust and individual features, such as the impact of photos on perceived trustworthiness. Wang and Emurian (2005) created a framework that captures findings from such studies and classifies them into four categories: Graphic Design, Social Cue Design, Structure Design, and Content Design. Graphic design refers to design factors such as colours and quality of images that usually determine the first impression of the user. Social Cue Design relates to photos of people, video clips, and available communication channels on the website that give the user the impression of interacting with another human being. The next category, Structure Design, deals with the overall organisation and navigation of the website. Lastly, Content Design related to information components of the page, which may be textual or graphical. Also, the domain name, seals of approval, and disclosure of all aspects of the customer relationship belong in this category.

This study is focussed on eHealth in particular whereas the studies mentioned by Wang and Emurian (2005) were focussed on e-commerce and other more general types of websites. It would be premature to conclude that the same findings hold true in the eHealth domain. In the following chapter, I will discuss how the different categories of the Wang and Emurian

(2005) study were represented in my contextual inquiries. I will especially highlight eHealth-specific aspects.

<b>Global Themes</b>	<b>Organising Themes</b>	<b>Basic Themes</b>
Graphic Design	Positive Design Aspects	Good Design, Resembling Offline Experience, Functional Design
	Styles	Modern Design, Conservative Design
	Text Layout	Formatting, Legibility, Font
	Negative Design Aspects	Unprofessional Design, Lack of Aesthetics, Unfitting Elements, Misleading Design Features, Too Pretty, Home-made Website
	Visual Elements	Colours, Blurry Images
Social Cue Design	Physical Presence	Location, Lack of Personal Contact
	Direct Communication	Live Chat, Telephone
	Indirect Communication	Forums, Social Media
	Involvement of Experts	Number of Involved Doctors, Experience of Doctor, Doctor Personally Involved
	Visual Cues	Photo, Video, Stock Photos
Structure Design	Structure	Static Structure, Poor Structure, Fitting Structure, Confusing Structure, Clear Structure
	Navigation	Confusing Navigation, Useful Navigation, Internal Links, Broken Link, Too Many Sidebars
	Order	Sequence, Popups, Asking too Soon for Data
	Outcomes	Simplicity, Ease of Usage
Content Design	Quality of Texts / Content	Detailedness, Informative, Scarcity of Information, Number of Covered Topics, Specificity of Information, Complexity, Information up-to-date, Good Explanation, Redundancy
	Cost	Transparent Pricing, Payment Required, High Cost, No Payment Required, Intransparent Pricing
	Signs of Expertise	Statistics, Scientific Information, Technical Language
	Branding	Name, URL, Logo

	External Validation	Awards, Seals of Quality
	Appropriateness of Texts / Styles	Choice of Words, Conciseness, Lengthy Texts, Typos, Readability, Foreign Language
	Liability	Data Protection, Legal Aspects

### **Graphic Design**

The global theme Graphic Design comprises five organising themes: Positive Design Aspects, Negative Design Aspects, Text Layout, Styles, and Visuals. The first organising theme, Positive Design Aspects, refers to basic themes in which the participants expressed an overall positive impression of the design. This was for example because the website design resembled their offline experience of healthcare and the impression that the design supports the function of the eHealth service well.

**Example 1:** That looks pretty nice (laughs). I don't know how else to say it. (Participant AH, Good Design)

**Example 2:** Very easy to grasp. Heart arrhythmia is depicted exactly as I know from the cardiogram. That's how it is. Nothing new for me, I've seen that at my doctor's practice. (Participant LG, Resembling Offline Experience)

The organising theme Negative Design Aspects summarises all basic codes that refer to negative sentiments related to design aspects. On the one hand, this was the case when the participants did not perceive the website to be professional enough. Sometimes, participants described the website as looking as if someone just built it at home, which means that no professional designers were involved in building the page. Related to this, several participants referred to websites as "too pretty", which suggests the conclusion that pretty design features are unfitting for a health-focused website. However, the opposite was true as well, as some websites were criticised for their lack of aesthetics. Last, some websites were criticised for misleading design features and unfitting elements, since these reduced the usability of the website.

**Example 3:** I do NOT understand why, if I am supposed to do everything online, this map, in other words the physical location of the doctor, plays any role. (Participant MA, Misleading Design Features)

**Example 4:** This Website looks a little like a dating platform with all those butterflies on it (laughs). It's actually kind of funny to see what ideas some come up with. And then I think to myself: "So this is the website of a company like Hexal.de." Ok... (Participant SS, Unfitting Elements / Too Pretty)

**Example 5:** And then this website called Ärztlicher Rat Online... I just thought it looks like a doctor might have just built it quickly at home. Didn't seem very trustworthy. (Participant CL, Home-made Website)

The next organising theme, Styles, refers to modern and conservative design elements on eHealth websites. Interestingly, neither was clearly preferred. Participants argued that a modern design suggests that the website is up to date, but may mean that the website is commercial, which was regarded as negative. Conservative design was seen as more neutral, with the risk of being outdated.

**Example 6:** BUT it's new, so I would think that the information is NEW as well. They are up to date. Whereas something conservative gives me reassurance in a different way because there I think, okay, this has a solid BASE and some depth. They speak from experience, right? (Participant NR, Conservative Design / Modern Design)

The remaining two organising themes are Text Layout and Visual Elements. Text Layout refers to aspects such as legibility, font, and formatting, whereas Visual Elements refers to colours and blurry images. Apart from colours, all items are generalisable to general e-commerce websites. Colours, however, differ in the sense that participants were expecting "medical" colours such as blue, green, and grey.

**Example 7:** So, for medical things, I find that blue and green are the standard colours and that works. Some designers might think: "Oh that's boring, let's do something more exciting". But people are subconsciously so used to these colours, they associate them automatically with hospitals. (Participant HG, Colours)

### ***Social Cue Design***

The next global theme that I would like to discuss is Social Cue Design. Social Cue Design comprises five organising themes: Direct Communication, Indirect Communication, Involvement of Experts, Physical Presence, and Visual Cues. Indirect and Direct Communication summarise different means through which the companies communicate with users, namely telephone, live chat, social media, and forums. Interestingly, the connotations around all communication channels apart from telephone were negative. Social media was said to be unfitting for medical companies, live chats as invasive, and forums as unreliable.

**Example 8:** So here is now a forum. That's not really necessary. In forums, you find all sorts of people who think they know what they are talking about. So no, I would... (Participant SS, Forum)

**Example 9:** And this here on top is nice that they have a hotline I mean. That speaks to me. The website seems trustworthy. I think it's quite good. (Participant LG, Telephone)

Apart from communication channels, participants paid attention to whether or not medical experts are involved in the website. Expert involvement was overall seen as a very positive aspect. Further information about the education and experience of the involved doctors was also a major trust indicator, although several participants emphasised that a Ph.D. or research involvement may also mean that the doctor has less time or is detached from involvement with patients. In other words, the logic is not "the more degrees, the better", but it was rather important that doctors display a fair amount of experience and seem approachable. The participants liked when the name of the doctors was displayed because that gave them the impression that they could find more information about the person on other online resources.

**Example 10:** So, I think it's quite trustworthy because she's (referring to the doctor) quite into it, she's visible. As a PERSON. (Participant FH, Doctor Personally Involved)

**Example 11:** And they are all actively involved in research. So, all of them are lecturers or professors. And apparently with a lot of expertise. In my experience with professors, they are a bit hard to get hold of because they are so busy. But then it's trustworthy, when people have a lot of experience. (Participant HG, Experience of Doctor)

The next organising theme I will elaborate on is Physical Presence. Physical Presence is related to the location of the company behind the eHealth service and the lack of personal contact that results from online services. Regarding location, several participants were positively surprised when they found out that either the company is based in a place that they know or when the doctor was from a region they know. There was a direct impact of location on perceived trustworthiness. Lack of personal contact in the sense of face-to-face interaction, on the other hand, was a key argument that participants used against the usage of and trust in eHealth services.

**Example 12:** Because I am of the opinion that, if I need information on this topic, I need a direct contact. That means I would go to an orthopaedic specialist. (Participant JP, Lack of Personal Contact)

**Example 13:** They're based here in Berlin, so that is good because I could just go there personally. I like it when you don't just have an online contact, but you know that if things go wrong, they are available (offline). (Participant HG, Location)

The last organising theme of the global theme Social Cue Design is Visual Cues. Visual Cues is comprised of Photos, Videos, and Stock Photos. There was no overarching agreement as to whether photos are signalling trustworthiness or not. High-quality photos of involved doctors or clinics had a positive effect, whereas stock photos often had the opposite effect. Some participants, however, had a very critical stance towards elements that focus on "emotional arguments" such as nice photos because this seemed like an attempt to manipulate them.

**Example 14:** Yes, stock photos or any smiling face. So, I know exactly what they are trying to do. They try to trigger emotional reactions and I am thinking to myself, I would much rather be convinced by facts and solid information instead of some photo of smiling people. (Participant JD, Photo)

**Example 15:** Well, yes, something like that, smiling doctors, that is always very trust evoking. (Participant SL, Photo)

### **Structure Design**

Now I would like to turn to the global theme Structure Design. It comprises of the following organising themes: Structure, Navigation, Outcomes, and Order. Structure and Navigation are closely related to perceived usability. In most cases, participants only referred to these aspects when usability was limited due to poor or confusing navigation or structure. An exception to this is the basic theme Clear Structure, which was several times an observation that participants made at first glance at a page. Useful navigation was mentioned much less frequently.

**Example 16:** Women and Contraception. We don't need that one. Skincare. Other Services. Sleep Problems and Travel Pharmacy. Have I missed it somewhere? Maybe under "more"? I have no clue. (Participant AP, Confusing Navigation)

Another important factor was the order in which information was presented, which is captured under the organising theme Order. Pop-ups that interrupted the natural flow of exploring the page were regarded as especially disturbing. What is more, registration forms early on in the website visit were a major negative factor. Participants felt put under pressure by these features, which led to a decrease in trust.

**Example 17:** So, if they ask for so much information and deliver so little information themselves, that is somehow weird. (Participant JD, Asking too soon for Data)

Lastly there is the organising theme Outcomes, which related to outcomes of structural design. The two basic themes are Ease of Usage and Simplicity. Ease of usage and simplicity were naturally positive features in the eyes of participants, whereas low usability and cluttered websites led to frustration.

**Example 18:** No, it's quite self-explanatory I would say. Yes. Everyone who used the internet before should be able to use this page it, too (laughs). (Participant PH, Ease of Usage)



### ***Content and Service Design***

The next global theme is Content and Service Design. The original title according to Wang and Emurian (2005) is only Content Design, but in the text, they refer to aspects related to the customer relationship and pricing, which were important factors in my analysis as well. So, I changed the title to Content and Service Design.

This is the most extensive theme with seven organising themes: Cost, Signs of Expertise, External Validation, Appropriateness of Texts / Style, Liability, Branding, Quality of Texts / Content.

The first organising theme, Quality of Texts / Content deals with a variety of aspects ranging from the complexity of content to redundancies and specificity. The results of the analysis are in this case very straight-forward and as expected: Participants expected up-to-date information that is not too complex for the layman. Main criticisms were a scarcity of information, redundancies, and great complexity.

**Example 19:** So, it's not enough to show a bunch of simple emoticons and a couple of arrows (referring to video). I need a proper explanation. So, they don't really explain what my benefit is (..) and why it so great. (Participant MA, Scarcity of Information)

Regarding the organising theme Cost, the findings are rather complex. There are two separate layers. On the one hand, the transparency of the pricing structure and, on the other hand, the actual price. In Germany, the vast majority of people are insured by public health insurance and they never get to see any medical bills because the payment is done directly by the insurer ("Krankenversicherung in Deutschland," 2018). As a result, German people are not well educated about the cost of healthcare. Some of the reviewed eHealth services, however, had offers that had to be paid directly by the customer because insurances would not cover the cost. The reaction of participants to the fact that they would need to pay themselves for the eHealth service was partly surprise and partly annoyance. Some compared the eHealth services to the "free" consultation by a real doctor (paid for by their insurance) and concluded they would rather consult their own doctor. In the sum, participants showed little willingness to pay for eHealth services and also little knowledge about reasonable pricing of health-related services. Transparent pricing, in contrast, led to

positive reactions because people said it demonstrates integrity and trustworthiness. They felt taken serious by the company when pricing was mentioned early on the website.

**Example 20:** Like I said, one needs to have expert knowledge, be quite into the topic because I wouldn't know how to judge the figure "dental implants for 1,610 Euro". (Participant DS, Payment Required)

**Example 21:** How much it is worth... Well, I think it should be for free actually. (Participant AP, Payment Required)

**Example 22:** Because if I need to pay for it, I might as well call my own doctor. No, in that case I don't need to start a query here. (Participant AP, Payment Required)

**Example 23:** They explicitly mention cost. I think that's good. So, it's not a hidden cost kind of thing. They don't fool people. (Participant CW, Transparent Pricing)

Regarding the organising code Signs of Expertise, scientific evidence and technical language are generally seen as positive feature. Especially when related to known institutions such as universities. Stating scientific facts without source, however, sometimes led to suspicion.

**Example 24:** With regards to the scientific foundations of the service, they refer to the University of Münster. But that's at the very end of the page. That's something I would add ON TOP because one, there is a university involved and two, it is a German university. (Participant MA, Scientific Foundations)

**Example 25:** Yes, "95%, complete their task impeccably". Ok, probably they made that up themselves. (Participant SS, Statistics)

The organising theme External Validation refers to Awards and Seals of Quality. Participants' view on awards was positive, yet participants did not seem to pay attention to the kind of awards the companies won or who is the body awarding the price. The situation regarding Seals of Quality was similar. The main reaction of participants was positive, no matter what seal they saw and whether they knew the seal before. A special case is the awarding body Stiftung Warentest, which many participants referred to as a known and

trusted organisation. Stiftung Warentest was founded in 1964 and regularly publishes reports on the quality of products and brands, historically through their own magazine and nowadays online as well (“Stiftung Warentest,” 2017).

**Example 26:** They have two seals here called Pharmachecker and Trustpilot. That’s good. I don’t know them or what kind of quality seals it’s related to, I would need to look it up. But the fact that they have seals creates some... (...) If it was a quality seal that I knew and that was a scam, I would see it differently. But those two I don’t know. So I will trust it for now. (Participant LG, Seals of Quality)

Now I would like to turn to the organising theme Branding, which comprises the basic themes Name, Logo, and URL. The main reference point with regards to logos was the pharmacy logo that German “real” pharmacies use. When the same logo was present on websites, it added to the website’s trustworthiness. Participants also reacted positively to names that referred to official services, such as “Tropeninstitut” (Tropics Institute) or “Deutsches Zentrum für Diabetesforschung” (German Centre of Diabetes Research). URLs with key health terms had a similar effect, an example would be [gesundheit.de](http://gesundheit.de) (comparable to [health.co.uk](http://health.co.uk)). People reasoned that a company must be large or known to acquire such a domain name.

**Example 27:** And sure, Diabetes Ratgeber. If it’s from a real pharmacy or not, but the logo is there. And that surely creates trust. (Participant SS, Logo)

**Example 28:** I don’t know [gesundheit.de](http://gesundheit.de) either, but I would expect more from them. Because I think if someone has such an URL (laughs)... They’re probably reputable. (Participant SS, Name)

The next organising theme is Liability, with the basic themes Legal Aspects and Data Protection. Legal aspects played a role in the case of Dr Ed, which is a website that offers both prescriptions and drugs for issues such as Malaria, urinary tract infections, and sexual dysfunctions. The service offer diverts from the typical protocol in Germany, where a patient needs to meet a doctor in person to get a prescription (“Verschreibungspflicht,” 2018). Therefore, several participants were suspicious about the legal status of the company. The

only other company that caused a similar effect was Medigo, a medical travel company. In other cases, participants paid little attention to legal aspects and terms and conditions.

In terms of data protection, participants were reluctant to provide data. Sometimes, this reluctance was justified by not wanting to receive any newsletters. In most other cases, it was not further specified what the concern regarding providing data is. An exception was non-personal data, such as information about one's disease without providing one's name as well.

**Example 29:** One can get a PRESCRIPTION here. That's interesting. I wonder how they do it. Regarding legal aspects, I mean. (Participant FH, Legal Aspects)

**Example 30:** Why do I need to provide my data in the first place? And probably I will receive thousands of emails and spam and all that. I think it's good that one doesn't need to register to complete the test. (Participant HG, Data Protection)

The last organising theme that belongs to the global theme Content Design is Appropriateness of Texts / Style. This theme refers to whether the texts and the style are suitable for a mostly lay audience of patients. Mentioned aspects were low readability, lengthy texts, and unsuitable choice of words. Also, issues such as typos and text sections in foreign languages were criticised.

**Example 31:** I'm not an expert in this field, no idea what this is supposed to tell me. List, blah blah, mmhh, but I'm... Well, my problem is still not solved. (Participant NR, Readability)

### ***Conclusion on Design Network***

In conclusion, the framework of design-related trust antecedents proposed by Wang and Emurian (2005) proved to be very relevant to eHealth services. Aspects of each category appeared relevant to participants' decision making about the trustworthiness of different eHealth services. None of the categories offers a straightforward answer to whether or not a service is deemed trustworthy. In the example of photos, participants considered the quality of the photo, the content, and even the designer's intention before coming to a conclusion.

That means the framework offers a handy structure to think and communicate about trust features on websites, but it does not provide a straightforward checklist of features that will enable trust.

### Third-Party Influence

Third-party influence is a thematic network that contains trust features that were not captured by Design Network because the themes refer to trust signals that are unrelated to web design. The only global theme of this network is Third-Party Influence. The three organising themes are Affiliations, User-Specific Factors, and Ripple Effect.

<b>Global Themes</b>	<b>Organising Themes</b>	<b>Basic Themes</b>
Third-party Influence	Affiliations	Insurance, Media, Government, Institutions
	User-specific	Social-circles, Own Doctor
	Ripple Effect	Reputation, Transfer of Trust

Affiliations stand for relations between the eHealth service provider and organisations such as insurances, government, media, and other institutions. Affiliation with institutions and government were important trust factors. Participants either concluded from the eHealth provider's name that there is an affiliation or from cues, such as logos or reference in the content of the website.

Affiliations with media played a role in two ways: Firstly, some eHealth companies used logos of TV stations and magazines and links to articles that were published about them. Secondly, sometimes participants proactively googled the eHealth provider to find unbiased information. Overall, media coverage was seen as a trust-enhancing factor. The only exception to this was coverage by known tabloid newspapers that were not regarded as a trustworthy source and hence had a negative effect on the provider's trustworthiness as well.

The last basic theme of the organising theme Affiliations is Insurance. Insurances were a major trust factor for participants. In some cases, the insurance would cover the cost of individual eHealth services. Insurance coverage was a clear sign for participants that the particular eHealth service is of high quality and trustworthy. In other cases, participants went

proactively to the website of their insurance to search there for recommended medical apps and reviews of eHealth services. This shows the highly trusting relationship that German people have towards their health insurance.

**Example 32:** I saw somewhere that ARD and NDR (German TV stations) ... That's of course great. So, you feel in good hands. (Participant FH, Media)

**Example 33:** I would have a look at the website of my insurance to see which apps they recommend for Diabetes. (Participants CW, Insurance)

**Example 34:** Ok, here are now remarks regarding the insurance, they cover the cost. That means it is a recognised service. So, I think it's good, not a scam because it's recognised and registered through the insurance. That is quite trustworthy. (Participant SL, Insurance)

Next, I would like to elaborate on user-specific third-party influences. These are not the same as truster-specific trust antecedents because they do not refer to characteristics of the truster. The theme much rather refers to contacts of the truster, such as their social circles and their own doctor and their views and recommendations. Items of this theme did not have a major influence on trust towards eHealth providers. However, in several cases participants reported that they would rather consult their own doctor than use an eHealth service. That means the relationship between doctor and participants is so close and trustworthy that no need for further parties exists. And as long as there is no need for a service provider, there is little drive to take risk and trust in an eHealth service.

**Example 35:** But if I was being treated for a disease and the doctor told me what to do, I usually think: He knows what he is talking about. I will trust in him. And I would not come up with the idea to search any further for information. (Participant ES, Own Doctor)

The organising theme Ripple Effect relates to Reputation and Transfer of Trust. These are third-party effects because reputation builds long-standing references in the media or through word-of-mouth. Transfer of Trust describes situations in which participants made conclusions about trustworthiness based on similar services or organisations. Neither was a major factor regarding overall conclusions about providers' trustworthiness.

**Example 36:** I think it's ok. Because I would think the information won't be much different from the package insert. And I trust in the package insert, too, after all. (Participant NR, Transfer of Trust)

Benevolence, Integrity, Competence

The thematic network on design aimed at categorising trust signals in a way that a service provider or designer would think about them. It answers the question: “What type of trust signals do users take into consideration when they visit a website?”. In contrast to that, the second thematic network is focused on sub-categories of trust. The global themes are Integrity, Benevolence, and Competence. These sub-categories of trust are widely agreed upon by researchers from different fields and have been discussed in greater detail in the literature review. The theme that will be described in this section investigates the question: “Which category (integrity, benevolence, competence) is supported through which trust signals?”. The analysis was, on the one hand, focused on the conclusions participants drew from design aspects to each trust category, but on the other hand also breaking the broad terms integrity, benevolence, and competence further down to understand which characteristics really form the basis for trustworthiness in the eHealth domain.

<b>Global Themes</b>	<b>Organising Themes</b>	<b>Basic Themes</b>
Integrity	Pricing	Transparent Pricing, Intransparent Pricing
	Obtrusive Elements	Advertising, Newsletter, Asking too soon for Data, Popups, Registration
	Malevolence	Racism, Persuasion, Pressure, Manipulation
	Expertise	Number of Involved Doctors, Doctor Personally Involved
	Sound Values	Credibility, Independence, Legitimate, Moral aspects
Competence	Structure Related	Poor Structure, Confusing Structure, Confusing Navigation, Clear Structure
	External Reference Points	Awards, Affiliation with Institution, Comparison with Established Company

	Expertise	Statistics, Scientific Foundation, Experience of Author, Technical Language, Number of Covered Topics
	Other Positive Features	Ease of Usage, Informative, Quality, Simplicity, Reliability, Modern Design, Nationality
	Other Negative Features	Redundancy, Broken Link, Bug, Confusing, Complexity
Benevolence	Financial Aspects	Payment Required, Financial Motivation, Commerciality
	Callousness	Taking Advantage of People's Fear

### ***Integrity***

The first global theme I would like to present is Integrity. Integrity can be further broken down into the organising themes Sound Values, Malevolence, Obtrusive Elements, Pricing, and Expertise.

The aspect of pricing has been mentioned in the previous section already. The main pricing-related aspect that influenced perceptions of integrity is whether pricing was communicated transparently. Several participants highlighted that they appreciate upfront information about cost, even when they did not agree with the price itself.

The next organising theme is Obtrusive Elements. This organising theme refers to elements that have the main purpose to make the user conduct a certain action and, hence, reduce perceived integrity. Examples are Advertising, Pop-ups, required registration. A lot of users reacted very sensitive to such items and complained about not wanting to receive newsletters or “pay” with their personal data. One could say participants saw these elements as a softer form of blackmail because in order to get what they want (e.g. health advice), they have to bear with these forms of pressure and intrusion. It is important to note, however, that not all participants showed the same reactions. Some also gave their personal data with no hesitation or further comment.

**Example 37:** But I assume one needs to register to get any information, right? (Participant AP, Registration)



**Example 38:** Now in this moment, I would, like I said, have resistance to give them all my data. (Participant SL, Asking too soon for Data)

Similar and even more extreme sentiments are captured by the organising theme Malevolence. This organising theme summarised a variety of negative observations that also reduced perceived integrity. These are: Racism, Persuasion, Pressure, and Manipulation. As mentioned in the previous paragraph, advertising was one element that made participants feel put under pressure or being manipulated. However, other participants reacted in a more neutral manner and explained that the company naturally needs to use advertising to finance themselves. So, all the basic themes of this organising theme lead to decreased integrity and, as a result, decreased trust. Whether a person inferred from a website feature that there is a manipulative intention behind it remains dependent on the participant's subjective views.

**Example 39:** When it seems the main purpose of a headline is to make you click on it, then I do find that suspicious. (Participant CL, Persuasion)

The next organising theme refers to the opposite end of the spectrum: Sound values that increase perceived integrity. The basic themes are: Credibility, Independence, Reputable, and Moral Aspects.

Independence played a role in two constellations. On the one hand, participants deemed it important that any medical advice is independent of other motives, such as selling medicine or further treatments. On the other hand, it was mentioned that reviews need to be independent in order to be credible. Some participants did not believe in reviews that were published by the company itself.

Legitimate is a somewhat special case because the translation between German and English simply does not seem to fit perfectly. Participants frequently used the term "seriös" when referring to trustworthy, reputable, and professional websites. This is a German word that is generally used to describe reputable business people. In this study, it was used many times as an overall judgment of an eHealth provider.

Lastly, the basic theme Moral Aspects captures a variety of different considerations that participants made about the ethics behind certain companies and service offers. Participants

often compared the rules, regulations, and ethics that apply offline to eHealth services and were often disappointed or even shocked when they noticed that an eHealth company was operating in a legal grey area.

**Example 40:** And I don't like the section "Our Customers About us". With these things, I get the feeling, when people show their face and it says Xenia, 27, Berlin... I get the feeling those are hired actors. (Participants LG, Independence / Credibility)

**Example 41:** And that there are all those start-up companies these days that cut around legal corners... (...) So it is quite interesting that they exist. It might not be shady or illegal, but they use technology to jump lots of bureaucracy. Not sure if that's a good thing or not. (Participants CL, Moral Aspects)

The organising theme of this group is called Expertise. It relates to the involvement of medical experts in eHealth companies. It was seen as unethical when the perception arose that medical information or service offers were not provided by medical experts, but by businesspeople.

**Example 42:** (speaking about why she thinks the website is credible) Also, the feeling that several doctors are involved and all the information about the doctors and their photo. (Participant HG, Number of Involved Doctors)

### ***Competence***

The global theme Competence summarises all quotations in which participants speak of the functioning of the websites and the perceived ability of involved staff. There were a number of structure-related items that led participants to the conclusion that the overall competence is reduced, such as poor structure, confusing navigation, and confusing structure.

What is more, participants used external reference points as a measure to determine competence. Basic themes of this organising theme are Awards, Affiliation with Institutions, and Comparison with Established Company, all of which have been discussed in the previous chapter.

Expertise was another determining factor regarding Competence. Expertise was also mentioned as an organising theme of the global theme integrity. The difference is that in the previous case, expertise was related to the question whether the service offer is ethical in the sense that it has enough medical expertise to fulfil requests, whereas in this case, it refers to the overall competence to solve a user's medical problems. Basic themes are Statistics, Scientific Foundations, Experience of Author, Experience of Doctor, Technical Language, and Number of Covered Topics.

**Example 43:** Yes, to read her CV and get an idea what she has done in her life, what she has studied and what kind of specialisation she has. And if she has a lot of experience in one specific field. That means if she specialised in neurodermatitis, she would have a better understanding than a dermatologist or a general practitioner who works on a lot of topics. (Participant HG, Experience of Doctor)

The two remaining organising themes of this section are Other Negative Feature and Other Positive Feature. Negative, and hence competence reducing, factors were redundancies, broken links, bugs, confusing items, and too great complexity. It is safe to say that participants drew conclusions from technical features to overall competency, which means broken links, for example, decreased the trust in medical advice. Positive, competence enhancing factors were ease of usage, informative content, simplicity, reliability, modern design, and certain nationalities. German doctors and company headquarters in Germany were seen as a sign of competence, whereas affiliation with Turkey and Thailand were for example perceived as an indicator for lower quality.

**Example 44:** And the COUNTRIES, I think that's crazy (referring to medical travel company). I mean sure, where else would they be, right? I think Poland is probably the best. Because it is not too far away. But, I mean, I wouldn't... To TURKEY... Except I was going there on holiday anyway, then I could combine that. (Participant NR, Nationality)

### ***Benevolence***

The last global theme that remains to be discussed is Benevolence. Overall, there were few references to benevolent acts of eHealth providers. There was, however, a certain negative attitude towards commerciality of eHealth services. As mentioned previously, German

patients rarely get to see medical bills, which are directly paid by public insurance companies. What is more, until recently doctors were generally prohibited from almost any form of advertising (“Arztwerberecht,” 2015). Having these parameters in mind, it is understandable why participants judged a commercial attitude of eHealth companies as a lack of benevolence.

A related point that makes up the second organising theme of Benevolence is Taking Advantage of People’s Fear. Participants recognised that some patients may be in a particularly anxious state of mind, which increased participants’ negative judgements about commerciality.

**Example 45:** I think that some, actually most of these companies that offer such services, they want to be successful companies. And that means they don’t do it for societal welfare. (Participant CL, Financial Motivation of Provider)

**Example 46:** But this is a little stupid because he doesn’t provide any answer. So, I need to contribute some MONEY here (annoyed voice). (Participant AP, Payment Required)

### **Evaluation and Search Strategies**

In the two sections above, I presented two thematic networks. One that gives a structure to different design and content-based trust antecedents that can be found on websites and another one that sheds light on the relationship between trust antecedents and the trust components integrity, benevolence, and competence. In other words, I used my data to provide an in-depth profile of trust signals and their impact on perceived trustworthiness. In the following chapter, I will move away from the focus on trust signals and discuss the “how” of participants’ trust judgments. I will explore different information gathering and decision-making strategies that participants used throughout the contextual inquiries. This section is not based on a thematic network. I will, however, provide quotations wherever possible to strengthen my argument.

#### Search Strategies

The search strategies that participants used can be classified into two main categories: The collection approach and the concrete search approach. The collection approach refers to a

behaviour where participants directly started with the health scenario task and collected information about the eHealth provider whilst solving the task. In these cases, participants did not proactively search for any particular information / trust signal. They rather took notice of several features whilst solving the task and commented on them.

The concrete search approach, in contrast, summarises behaviour where participants were proactively searching for either a certain trust signal or for external sources to verify some information. Especially for high-risk services, such as medical travel, participants used this search strategy. In some cases, they even Googled the company and read newspaper articles about it before entering the respective website. In other cases, the concrete search approach showed when participants were looking on the website for aspects such as accreditations or experience of the involved authors or doctors. Overall, the collection approach was more common among my participants. As far as online encyclopaedias and other purely information-providing websites are concerned, the concrete search approach was not used at all. In other words, risk-perception was a decisive factor with regards to the applied search strategy.

**Example 47:** So, regarding this page, Medigo, I would... I would definitely go to several websites to see what people say about it. Because that's really scary. (Participant CL, Concrete Search)

**Example 48:** I should probably if we still have enough time, I would like to read through some external reviews (on an external website). But my first impression was good. (Participant JD, Concrete Search)

### Decision-Making Strategies

Similar to the different search strategies, there were also several strategies of making sense of information about eHealth providers and deciding whether they are trustworthy. The first approach that I would like to discuss is the accumulative approach. In this approach, participants considered a variety of factors for their decision-making, with no outstanding feature determining the decision-making. This approach is closely related to an approach I called situational normality approach, in which participants argued that a website is as you would expect a website of this kind to be, with no unusualness.

**Example 49:** Yes, it looks like many websites of this kind. Quite ok. Again a couple of quizzes and these things. And it has the information from the package. (Participant CL, Situational Normality)

The next decision-making strategy is the deal-breaker approach, in which one negative aspect led to a complete breakdown of trust. The example below illustrates how one participant gave a positive rating to the website and its design, but the commerciality of the service factor outweighed all other aspects. In more rare cases, participants used the opposite approach, where one particularly positive feature determined the trust judgment.

**Example 50:** Well, the website is certainly very well done. But it triggers caution in me. I have the feeling people sell something; it is all about selling. It is all about SELLING. That is not medical advice, but someone wants to... (...) I wouldn't recommend to anyone using such a service. I would send them to a real pharmacy. That's why we have so many pharmacies in Germany and people are well educated. My opinion. (Participant CW, Deal-Breaker Approach)

Similar to the search strategies, decision-making strategies were also influenced by the risk of the particular eHealth service. On low-risk websites, individual negative aspects, such as advertising, had less impact than negative aspects or lack of positive aspects. Participants commented that general health information could easily be double-checked elsewhere, so both the risk of and the dependency on such websites remained low. Websites, such as medical travel or medical second opinions, which require personal data and payment data were analysed with more scrutiny.

### **Impact of Trustee-specific Parameters**

Trustee-specific parameters were not the focus of this analysis; therefore, the following chapter is just giving an overview over insights on characteristics of participants that had some influence on the study results.

One aspect is previous experience with similar or the same websites. This aspect played a minor role because apart from few incidences, participants had not used the websites that were used for the study. Personal preference, on the other hand, had a slightly larger

influence because some participants said they generally avoid using eHealth services. As a result, even well-presented websites did not result in the intention to use the service.

Age played a smaller role than expected. Overall, there was no direct correlation between age and trust in eHealth or usage intention. This may have to do with the fact that also the older participants were very computer literate, apart from one participant. Profession influenced the study only in one contextual inquiry, where a participant was a trained doctor and judged the services based on her own knowledge and experiences.

## **Results of Expert Interviews**

In the following chapter, I will present the results of the analysis of the expert interviews. I applied thematic coding after Attride-Stirling (2001) for the analysis, as explained in the previous chapter. Again, I read and re-read the interview transcripts to develop basic codes. Regarding the coding frame for global themes and organising themes, I used the design framework by Wang and Emurian (2005), which allows me to compare comments of users and experts on the trust implications of different design related features. Besides design features, experts also discussed user research that they carry out to learn about perceived trustworthiness, as well as legal aspects, external recognition, and truster-specific trust antecedents. These make up the other five global themes of the analysis and will each be discussed separately.

### **Experts' Definition of Trust**

Firstly, I would like to comment on the experts' definition of trust. The most striking aspect is that there is no standard definition across my sample. No two interviewees answered the same. There are, however, several relevant aspects that interviewees highlighted.

A number of participants defined trust by explaining how trust manifests in users' behaviour. They said for example that they look at metrics such as conversions, returning users, likes and shares on social media, and the duration of stay on the website. If these metrics are comparable to industry standards, they assume that users trust in the website. Another aspect related to users' behaviour is whether they believe in the information provided on the website, although this aspect is not directly measurable for service providers. Two

interviewees put emphasis on the entrusting of medical data, which they saw as a major indicator for users' trust in the company.

Lastly, some participants referred to company ethics and product quality that foster trust. Strictly speaking, they were not explaining trust, but trustworthiness. It is, however, a noteworthy aspect that not everyone fully understands the terminology of trust and trustworthiness.

**Example 51:** So, with regards to the user, trust is clearly... When a user is a returning user, he clearly shows trust. (Participant E3, Definition of Trust)

### Values and Traits Related to Trust

Global Theme(s)	Organising Themes	Basic Themes
Values and Traits	Positive	Integrity, Benevolence, Competence, Authenticity, Honesty
	Neutral	Basic Standards
	Negative	Commerciality, Intentionality

In the following section, I would like to elaborate on the values and traits that interviewees related to trust and trustworthiness. Values and Traits is a global theme and Positive, Neutral, and Negative are the related organising themes.

Basic codes related to positive values and traits were Integrity, Benevolence, Competence, Authenticity, and Honesty. This means experts referred to many of the same categories present in the literature. It also shows participants' general intention to gain trust by running a business in a morally sound way rather than through deception.

**Example 52:** We also use video. We have recorded a new video because the patients really wanted an unboxing video. That's really en vogue. So, we shot the unboxing video with real users. So, we looked for someone who uses the app and speaks from his own subjective experience. (...) Because if one of the staff did that, it would look fake. It needs to be someone who really uses the app. The patients notice that immediately. (Participant E10, Authenticity)



The only basic code for the organising theme Neutral is Basic Standards, which refers to the need to fulfil basic standards of service delivery. Negative traits are Commerciality and Intentionality. Both had been mentioned by participants of the contextual inquiries as well. The following quote by participant E12 draws the connection between commerciality in the medical field offline and online.

**Example 53:** There are of course those who still believe in the altruistic (referring to medicine). But there are also those who are very suspicious because they say that too much (referring to medical treatments) is being done for commercial reasons that should not have been done. That is similar with regards to doctors. Maybe even more blatant with regards to additional services (referring to medical services not covered by insurance). So, I think generally they (patients) are not aware... They realise the commercial component only in hindsight. I don't think anyone goes with a sceptical feeling to the doctor, but when he has been sold some additional services, the suspicion rises. (Participant E12, Commerciality)

So, essentially the expert is making the point that people generally (and especially historically) do not assume medical providers to have commercial intentions. When they do notice commercial intentions of medical providers, they react with suspicion and disillusionment.

### Discussion of Design Perspective

Global Theme(s)	Organising Themes	Basic Themes
Graphic Design	Functionality	Legibility, Responsive Design, Match between Product and Design
	Visual Appeal	Clean Design, Design, Modern Design, Colours
Structure Design	Sub-categories	Navigation, Structure, Page Flow
	Outcomes	Ease of Usage, Easily Accessible Information, Accessibility of Content, Usability
Social-cue Design	Direct Communication	Instant Messaging, Email, Telephone, Interaction with Real Person
	Indirect Communication	Social Media, Facebook, Speed of Social Media

	Visual Cues	Photos, Stock Photos, Photo of Contact Person, Videos, Quality of Photos
	Involvement of Experts	Collaboration with Doctors, Experience of Author, Involvement of Real Doctor, Expertise, Team Page
	Other Users	Amount of Social Media Followers, Traffic on Website, Feedback from Real Users, (Faked) Reviews
	Building Rapport	Emotionality, Language, Communication Style, Usage of „du“, Personal Touch, Interaction with Company
	Type of Relationship	Person-specific Trust, Trust in Company Representative, Entity of Trust
	Challenges	Lack of Personification in the Online World, Lack of Direct Feedback in the Online World
Content / Service Design	Quality of Texts / Content	Quality of Service, Quality of Content, Solving a Use Case, Answering Users' Questions, Anticipating Users' Questions, Service Design, Speed of Delivery
	Appropriateness of Texts / Style	Vagueness, Coherence, Language, Errors, Wording, Amount of Text, Readability, Unambiguousness
	Branding	Brand Building, URL, Enabling the User to Identify with Company
	Risk	Perceived Risk, Asking for Less Data to Maintain Trust, Storage of Patient Data, Data Protection, Access to Patient Data, SSL, Loss of Control
	Cost	Information for Free, Payment Required, Commerciality, Transparent Pricing
	Miscellaneous	Storytelling, Mission, Mission Statement

### Graphic Design

The global theme Graphic Design has two related organising themes: Functionality and Visual Appeal. As far as the functionality is concerned, experts mentioned the topics Legibility, Responsive Design, and Fit between Product and Design. There was no particular

emphasis on any of these topics, they were all just mentioned as general positive features. With regards to Visual Appeal, experts highlighted that the design should be clean, modern, and professional. One argumentation was that an out-dated website design suggests to the user that also the information is out-dated and, hence, less trustworthy. Another important insight is that design impacts on the first impression of the website and influences trust on the intuitive level, rather than on the rational level.

**Example 54:** But I think modern design matters, it does. Take non-responsive websites for example. Those are less trustworthy in my eyes. It means someone didn't work on them for a long time. They aren't very interested in me as a user either. I would see it like that. (Participant E8, Modern Design)

**Example 55:** I think people when they see something, they immediately have a gut reaction: Do you trust it or not? Which is partly also: What does it look like design-wise? Is it designed nicely or not? Which colours you use has an impact on that. (Participant E9, Design, Colours)

### Structure Design

Similar to Graphic Design, participants did not put much emphasis on Structure Design. Especially structure was not discussed as an item that is important just by itself, but rather as a means to an end. In the vast majority of cases that participants spoke of structure and navigation, it was to emphasise their impact on usability. So usability and accessibility were seen as the actual trust enhancing features and they are to a large extent dependent on structure design.

Whilst structure by itself was not pointed out as a major trust feature, usability was. Some participants went so far to say usability is the single most important trust enhancing feature. Other participants said usability is an absolute minimum requirement, especially since standardised website templates with good usability are readily available. It can, therefore, be classified as a hygiene factor: Its absence will likely destroy trust, whereas its presence is not an outstanding feature.

**Example 56:** Yes, well the structure of the page is related to user experience. So, if I am searching for something, want something, then I want to find it quick and easy and I don't want to get lost on the page. (Participant E8, Structure)

**Example 57:** The question "Can usability increase trust?" – I don't think so. Usability is a hygiene factor for trust in the sense: If it is not present and things don't run smoothly, it hinders it. That's my opinion. (Participant E6, Usability)

### Social-cue Design

Social-cue design is the global theme that was mentioned most frequently by participants and that is related to the largest number of organising themes: Direct Communication, Indirect Communication, Visual Cues, Involvement of Experts, Other Users, Building Rapport, Type of Relationship, and Challenges.

The comments around direct communication were mainly focused on telephone services. Instant messaging and email appeared to be only minor trust factors whereas the telephone was seen as a way to provide a face to the company and a way to reassure customers who have concerns about the service. Regarding indirect communication, participants provided a vast range of insights on social media especially. There was agreement about the importance and timeliness of the usage of social media for building trust relationships with customers. Facebook was the most frequently mentioned social media channel. One aspect that was mentioned was the difference between earned and paid media in the sense that trust is not built through paid interactions such as a fake following but through active engagement with users on the social media channel. What is more, it was highlighted that social media requires extremely fast response times, even more so than email. If this is not the case, companies can potentially lose trust. Another issue that creates the risk to lose trust is negative user comments and reviews that may receive a lot of attention on social media. For this reason, one participant said the usage of social media leads to a certain loss of control. The loss of control was also seen as problematic when it comes to users' questions because some users would openly ask for health advice or information about certain medications. EHealth companies may not provide any online diagnosis. Lastly, it was emphasised that social media requires for a more easy-going type of communication than the companies' websites.

**Example 58:** We have a technical hotline that patients regularly call. It is free of charge. We often tell patients about it. Feedback is very, very positive. (Participant E10, Telephone)

**Example 59:** On Facebook, we use it more to push the brand. But we have kind of like a more fun way of interacting with the audience than we do on our Website. So, we have, like, fun, like quizzes on there like, which body part are you. And, like: How good is your eyesight? Like, you know, so health-related quizzes. (Participant E4, Social Media)

**Example 60:** The second is this... Well, fear sounds very negative... The awareness that we are not allowed to say certain things. Yes. We are allowed to tell patients who use our products everything about the products. Patients or rather people who do not use our products may have the same question, but officially we're not allowed to tell them anything. Heilmittelwerbegesetz (German law on the advertising of medicinal products). So, how do you filter that on social media? (Participant E6, Social Media)

The organising theme Visual Cues mainly involved a discussion on photos. Participants agreed that the usage of photos is of great help when it comes to creating an emotional bond with users. Experts would for example use photos of the customer care person in emails to make users feel more connected with the service personnel. It was also mentioned that photos need to be authentic and that stock photos may reduce trust.

**Example 61:** We made a positive experience with that (usage of photos). We have a module on our website, where customers see the photo of their sales representative after the logging in. And if he doesn't have a sales representative, it displays the call centre. (Participant E6, Photo of Contact Person)

The next organising theme is Involvement of Experts. Overall, collaborations with doctors were clearly seen as a benefit in establishing trust. Especially in cases where users interact directly with a doctor. It was mentioned, however, that patients are often unable to judge the level of expertise of involved doctors. The mere involvement of doctors, independent of level of experience, leads to an increase in trust. The organising theme Type of Relationship deals with a related question: Who do users trust? This depends to a large extent on the type of service, but in cases where doctors or clinics are more involved, such as in medical travel websites or online second opinions, experts mentioned that users' trust in the doctor / clinic

is as important as the trust in the eHealth company. Which can have negative consequences on the company because they have little control over these external parties.

**Example 62:** They know it goes to a doctor (the medical file). And they know that someone here checks it and it is not done by a machine. People don't WANT that – that a machine does it. They know there are real people behind it. (Participant E11, Involvement of Real Doctor)

The theme Other Users refers to website features that show the presence or feedback from other users. On the one hand, these are reviews, and on the other hand indicators of website traffic or amount of social media followers. Whilst there was a general consensus that indicators of traffic and followership are positive, there were critical comments on the reliability of user reviews. Participants clarified that there is the risk of fake reviews, which may mislead users.

**Example 63:** I'm not sure if there is anything that is 100% reliable. It all started in the travel industry. Yes, with TripAdvisor, exactly, where people noticed: "Ok, those are all fake reviews". So, in the travel sector this is common sense by now. Nobody reads all those reviews and comments about hotels because everyone knows that the hotel wrote these things themselves. That's how it all started. (Participant E5, Faked Reviews)

### Content / Service Design

The last global theme of the group Design Features is Content and Service Design. It contains the organising themes Cost, Risk, Branding, Appropriateness of Texts / Style, and Quality of Texts / Content.

Brand Building and Cost were minor topics of discussion. Regarding Brand Building, it was mentioned that the URL and name should match the product and that especially affiliation with celebrities and other known organisations can strengthen the brand. As costs are concerned, experts solidified the results of the contextual inquiries in the sense that they said that due to health insurance coverage in Germany, most patients are unaware of the cost of health care and can be put off by high prices.

**Example 64:** People in Germany are not used to having to pay for things. Sometimes, I think people are unsure about a service when they realise it is not covered by their insurance. I think that is where they say to themselves: “Ok, I don’t know. My insurance doesn’t cover it”. But I think it is mixed. Some are reluctant because they don’t trust enough. But there are also many who are reluctant because they say: “I don’t want to pay for a medical bill”. (Participant E11, Payment Required)

The organising theme Quality of Texts / Contents deals with the service offer of the organisation. Experts agree that providing high-quality information and services increases users’ trust. Not only the trust of existing users but also of new users because high-quality content improves the search engine ranking. Experts defined quality content in the sense that it answers users’ questions and fulfils their expectations.

**Example 65:** I think you create trust foremost by slipping into the other person’s shoes. By understanding what the user’s needs are and why she should use the app. In the sense of how it creates a benefit. (Participant E10, Solving a Use Case)

The risk of the service appears to be an important aspect when it comes to building trust. Risk is mainly related to providing data: either payment data or health data. Participants discussed a number of different aspects. One was access to data. Depending on the service, some companies do not even have access to patient data because only the sub-contracted doctors get access. It was also mentioned that servers should preferably be located in Germany to increase trust. Overall, it was emphasised that Germany is a strict country when it comes to data protection and that fulfilling the German minimal criteria means providing a high standard of data protection. Also, despite saying that data protection matters to customers, one participant highlighted that customers hardly ever inquire about the company’s data protection standards.

**Example 66:** Especially in Germany, we have high (data protection) standards that we need to fulfil. And that we do fulfil. (Participant E10, Data Protection)

## User Research

Global Theme(s)	Organising Themes	Basic Themes
User Research	Tools and Methods	Qualitative Interviews, Measuring Trust, Design Thinking, User Tests, User Studies, Quantitative Methods, User Interviews, Google Analytics, A/B Testing
	Outcomes	Feedback Integration, Learnings from User Tests, Understanding Patients' Needs, Understanding Users' Needs, Transferring Offline Insights to Online world

The global theme User Research captures, on the one hand, which methods participants use to research users' attitude towards the company and, on the other hand, what the outcomes and consequences of findings are.

With regards to employed user research methods, participants reported to work with qualitative interviews, design thinking, user tests, quantitative methods, Google Analytics, and A/B testing. Although there was not one particular method that was used across the board, all experts confirmed that they conduct user research and that they gain insights from their preferred user research method about trust. In the section on experts' definitions of trust, I have already pointed out that the definitions vary. It is, therefore, only logical that the research methods differ: In cases where trust is seen as conversions, it makes sense to use Google Analytics to measure trust, whereas in cases where experts used values such as credibility as an indicator for trust, interviews are the method of choice.

The main outcome of user studies is that participants report a deeper level of understanding users' needs. This in turn was said to be a major contribution to building trustworthy services, since experts report that catering users' needs increases trust.



**Example 67:** We prefer two things that we do. Firstly, we conduct qualitative interviews. We analyse deeply the motivations that lead to specific actions. You can only find that out through conversations. And secondly, we conduct benchmark studies and see what happens after we implemented a change. So, for example, we ask through a quantitative study, how is the trust in the brand? (Participant E8, Measuring Trust, Qualitative Methods, Quantitative Methods)

## Legal Aspects

Global Theme(s)	Organising Themes	Basic Themes
Legal	Company Features	Legal Form, Official Accreditation, Terms and Conditions
	Laws and Requirements	Legal Aspects, Heilmittelwerbe-gesetz, Medical Product, Requirements to be a Medical Product, Prohibition from Diagnosis, Legal Reg-imentation, FDA versus Medical Product

The following section elaborates on legal aspects related to eHealth services and discusses how these are related to trust. The organising themes of the global theme Legal are Company Features and Laws and Requirements. Company Features include the company’s legal form, official accreditations, as well as its terms and conditions. The category Laws and Requirements mainly summarises laws related to online diagnosis, pharmaceutical drug release, as well as medical products.

Historically, the medical industry has been very regulated and, for those sectors that have existed for a long time, it still is strictly regulated. This became clear when I spoke to E6, the head of digital marketing of a large pharmaceutical company. According to him, the release of every product undergoes a number of clinical trials and the results have to be published in a document which is called “Rote Hand Brief”. These results would include for example contraindications and side effects. Before the “Rote Hand Brief” can be published, it needs to get authorised by a state agency called BfArM, which stands for Federal Institute for Pharmaceuticals and Medical Products. In other words, the BfArM acts as an external supervisor who ensures the quality and reliability of the report on potential risks related to

the products. From the perspective of the user, it means that the amount of trust he needs to place in the company is decreased because the overall risk is reduced by external supervision.

Although a layman would categorise many available eHealth websites and mHealth apps as medical products, the legal framework governing eHealth services is much less clear than the legal framework for pharmaceuticals and leaves some grey areas.

The reason is not that there is a lack of possibilities to gain external and even governmental certifications. My participant E10 explained that the diabetes tools that his company offers are officially recognised medical products. Being a recognised medical product can be compared to undergoing FDA approval in the United States, which is a more commonly known process. In order to maintain this status, the company needs to prove for example the reliability and the exactness of the product. What is more, the company needs to ensure that the phone-based parts of the service are not impacted by any software update of the phone. Which means that tests need to be conducted every time any phone company offers technical updates. All these procedures require a lot of effort from the company, which explains why companies actively decide not to go through the classification process to become medical products.

So, what do the grey areas around eHealth services look like in practice? The hearing test app of the company of interviewee E9, for example, is not yet classified as a medical product. The reason why the company is still able to operate on the German market is that they distance themselves from providing diagnosis or medical treatment recommendations. In practical terms that means that the result of the hearing test app is given in a format of “hearing age”: a fictitious concept that aims at giving the user a rough idea about his hearing capabilities without providing a clear-cut diagnosis. In addition, the user would be advised to speak to his medical health practitioner in case he feels concerned about his test result. From the perspective of the eHealth company, the status “medical product” is an optional accreditation that provides an additional room of action and credibility. It is not, however, a necessity for the company to access the market. Users, on the other hand, are apparently not educated about the meaning of the term medical product and there is little awareness about the great difference in quality assurance of a medical product certified services and non-regulated services. That means although the accreditation as a medical product would

objectively be a major indicator for trustworthiness, the actual impact on users' subjective perception is low.

**Example 68:** We have of course a very high-quality assurance standard. We are certified as medical product producer and all our products fall under this category. Not just the hardware, also the software. (Participant E10, Medical Product)

**Example 69:** The concept (medical product) is not yet fully present in the market because there are many large companies that provide their software to doctors and clinics without being certified medical products. Because they avoid the effort to guarantee the same quality standards over and over again. (Participant E10, Medical Product)

### External Recognition

Global Theme(s)	Organising Themes	Basic Themes
External Recognition	Affiliations	Celebrities, Insurances, Known Companies, Known Institutions, Media
	Seals and Certifications	(Faked) Certifications, Stiftung Warentest, Awards, Faked (Signals), Hon Code, Lack of Available Certifications

The global theme External Recognition has two related organising themes: Affiliations is the first one and the second one is Seals and Certifications.

Affiliations with entities such as insurances, celebrities, known companies, known institutions, and media was generally seen as a trust enhancing aspect. Especially links to charities and government bodies were believed to leave a positive impression on customers. Affiliations with insurances were also mentioned to be a plus although a participant highlighted that some customers are wary when eHealth companies are collaborating with insurances because they are worried that their health data may be communicated to the insurance. The situation with large companies is similar as participants reported that it is a plus to be affiliated with a larger brand. Being affiliated with a pharma company in particular, however, could trigger suspicion in customers.

**Example 70:** So, having some affiliation with a larger, more recognized company, or whatever, would give us that much more reach. And, yeah, if it's a bigger trusted company, then for sure. It gives us that much more legitimacy about us. So, we've been recently trying to partner with other companies and say, you know, that we've partnered with Lufthansa and partnered with KLM. (...) They also immediately trust us. (Participant E4, Affiliation with Known Companies)

Participants' comments on Seals and Certifications were rather insightful. Experts agreed that seals and certifications leave a positive impression overall. They also agreed, however, that users are not very educated about these trust signals and that any well-designed seal would have the same effect. Some experts even revealed that certain companies invent their own trust seals, or, in other words, they fake trust seals. It also became clear that there is a lack of eHealth specific certifications other than the HON Code and certification as a medical product (see section on Legal Aspects). The HON Code is a certification by the Health on the Net Foundation that guarantees that a provider adheres to certain principles such as transparency and honesty about advertising ("Health On the Net Foundation," 2018). So on the one hand, there are few available certifications, and, on the other hand, users do not even know those that exist. Interviewees did, however, mention one exception to this rule. It is Stiftung Warentest, the same institution that also participants of the contextual inquiries highlighted as trustworthy. Stiftung Warentest appears to be both well-known and responsible enough to represent a reliable trust signal.

**Example 71:** That goes hand in hand with what I said earlier. We Germans are very certification-trusting. We trust the consumer protection, we trust TÜV (non eHealth certification). We also trust CE. The more official seals there are, the better. I know from my own professional experience that some of these seals are entirely made up. You can find fake seals even on ALDI products by the way. (Participant E7, Faked Certifications)

## Truster-specific Antecedents

Global Themes	Organising Themes	Basic Themes
Truster-specific Antecedents	Demographic-related	Age, Different Needs of Old and Young Users, Demographics, National Culture, Culture
	Other Predispositions and Characteristics	Low Propensity to Trust, Initial Trust / Trust before Usage, High Propensity to Trust, General Distrust in Pharma Industry, Lack of Scepticism, Lack of Users' Willingness to Read, Different Needs of Old and New Users, Lack of Users' Background Knowledge, Fear of Being Controlled

The last global theme I would like to discuss is Truster-Specific Antecedents. Experts I interviewed mentioned a variety of characteristics and traits of users that impact whether a trusting relationship evolves. The most obvious aspects are demographic features such as age and nationality. According to participants, older users are less design-orientated and do not mind out-dated web design. Another participant put this claim into perspective by saying that the main indicator is frequency of internet usage. Independent of age, more seasoned users are less naïve about service offers and generally less trusting. At the same time, knowledge about encryption methods can make frequent users more trusting. Some very inexperienced users may distrust out of fear. To some extent these observations are contradictory, and no participant backed up their claims through study results. It is, therefore, not possible to provide a clear answer whether more experienced users are more or less trusting.

With regards to nationality and culture, participants reported that there is little difference in design preferences within Western countries, apart from slight colour preference difference. It was mentioned that Germans prefer cooler colours and slightly more “clean” design. As far as legal aspects are concerned, Germans are apparently particularly worried about privacy and data protection. Providing personal data is by German people often seen as giving up control.

**Example 72:** I think there are countries where people trust much more easily. Where you... When I see apps in Germany, you often hear the term “control”. “I am being controlled”.

That is the same in East and West Germany. “I am being controlled and I don’t want that.” In other countries that do not have the same historical background that Germany unfortunately has, people deal very differently with data and personal things. (Participant E10, National Culture)

Other trust-specific aspects were for example Low Propensity to Trust, General Distrust in Pharma Industry, Lack of Scepticism, and Lack of Background Knowledge. Overall, the consensus appears to be that users, despite fears of being controlled, do provide medical data rather easily. As explained in the literature review, there is a difference between relying and trusting. From the expert interview data, it seems that even in cases where the trusting attitude is low, users do provide data and rely on service providers.

**Example 73:** I think data is a whole different topic, (laughing) especially data protection. So, there I think there is a question of trust versus convenience. So, I am not sure if many people trust that their data is safe at WhatsApp. I would say, “No, probably not”. But they accept that the data will be used although they didn’t agree to that or only partly agreed to that. But that is the trade-off in the end. “Convenience means more to me, I don’t care if they read what I write.” Or whatever. (Participant E5, Lack of Scepticism, Data Protection)

## **Conclusions and Implications for Confirmatory Studies**

In this section, I would like to summarise the findings of the exploratory phase of this research project in the light of the main research questions. This summary will serve as a transition to the confirmatory section of this thesis and will explain subsequent methodological choices. I will highlight which research questions have been answered through the exploratory studies and which research questions needed further quantitative evidence in order to be answered.

As presented in the literature review, the research questions that guided this dissertation are the following:

*1) Does risk perception vary amongst different eHealth services and if yes, is there a direct correlation between risk perception and trust?*

*2) Which aspects of people's trust perception may be influenced by culture? Specifically, how does the trust-related reasoning of German study participants differ from existing findings of Anglo-Saxon researchers?*

*3) Which are the most influential trustee-specific trust antecedents with regards to eHealth services?*

*4) What does the application of signalling theory as an analytical framework tell us about the reliability of various eHealth-related trust signals?*

*5) How do users evaluate trustworthiness? Is it a rational decision or an intuitive decision?*

With regards to the first research question, the findings from the qualitative studies clearly indicate that people's risk perception varies depending on the service in question and that there is a correlation between risk perception and trust. Further, the results provide some ideas with regards to the factors that impact risk perception, such as the amount of personal data that needs to be provided and whether the service is linked to an actual medical treatment. In sum, the findings provide an ideal basis for a quantitative follow-up study in which the extent of the correlation between perceived risk factors and level of trust may be determined.

The second research question is related to cultural aspects that impact on people's perception of eHealth. Both the contextual inquiries and the expert interviews have brought up a variety of facets of the German culture and institutions that impact on the way in which people think about and use health related technology. These peculiarities are noteworthy when researchers draw cross-cultural conclusions about eHealth related topics and will be examined in greater depth in the discussion chapter of this thesis. The findings did not pose any additional questions that would need to be analysed through a quantitative study.

The third research question concerns the most influential trustee-specific trust antecedents with regards to eHealth services. The exploratory studies indicate that there are some features that many participants took into consideration when evaluating the trustworthiness of a website, such as trust seals, provision of a telephone number, company base in Germany,

and user reviews. These features will be studied in further depth in the quantitative study to understand the level of their impact in people's decision-making.

The fourth research question deals with the application of signalling theory as an analytical framework to better understand the reliability of trust indicators. The data from the exploratory studies provides a good basis for this analysis, since it includes the perspective of both users and providers. This will be examined in detail in the discussion section.

Lastly, the fifth research questions address the question whether users' trust is a rational or intuitive decision. The findings mentioned in relation to information gathering and decision-making strategies suggest that there is a high degree of intuition and heuristics involved in participants' reasoning. It appears that participants were often guided by initial gut feeling rather than scrutiny. The aim of the quantitative study is to test whether this conclusion is valid or if users are indeed basing their decision on objective indicators.

In conclusion, the exploratory studies have provided valuable findings in relation to each of the research questions. Especially in the case of the first, third, and fifth research question the findings provide a baseline for further exploration through quantitative methods. In the following chapter, I will explain the study design of the confirmatory study and to what extent the design relates to the qualitative findings.



# Methodology – Confirmatory Study

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As outlined before, this dissertation contains an exploratory and a confirmatory part which build on each other. The previous two chapters were dedicated to the exploratory part, which aimed at deepening the understanding of the specific intersection of trust, HCI, and eHealth. As a result of the two qualitative studies that were conducted, I was able to refine sub-questions and hypotheses for the confirmatory study which support the answering of the five main research questions. These sub-questions and hypotheses are a combination of findings from the literature and the results of the qualitative study.

In the conclusion of the data analysis of the exploratory study, I have outlined which research questions have been answered sufficiently through the qualitative data and which ones need further attention. In short, the quantitative study mainly focusses on providing additional insights in relation to the first, third, and fifth research question. It aims at deepening our understanding of the impact of risk perception and trust signals on people's trust. Further, it tries to capture whether people form their trust judgement based on spontaneous intuition or on rational reasoning.

In the following sections, I will discuss all relevant aspects of the quantitative study in further detail. I will first explain in detail which additional research questions and hypothesis I have developed to expand on the findings of the exploratory studies, and I will outline the experimental design and research procedures.

## Research Questions

Firstly, I would like to present the research hypotheses and questions that guided the design of the quantitative study. The first set of research questions and hypotheses analyse the impact of features of specific websites and service providers on risk perception and trust.

***Research hypothesis 1: Users' risk perception of eHealth services depends on the specific service offer.***

This research hypothesis is related to the first main research question (*Does risk perception vary amongst different eHealth services and if yes, is there a direct correlation between risk perception and trust?*) and it relates to findings of the qualitative study of this dissertation. A major shortcoming of existing literature on trust related to eHealth is a lack of differentiation amongst different eHealth services. A quick search on Google demonstrates the wide variety of eHealth services from online encyclopaedias to medical travel services. From an objective standpoint, the risk related to these services differs greatly: Some demand that users submit medical information and payment details (e.g. [www.medexo.com](http://www.medexo.com)), whereas others do not require the user to submit any data (e.g. [www.onmeda.de](http://www.onmeda.de)). The contextual inquiry showed that users apply different evaluation strategies for different websites and suggest that risk is the determining factor with regard to the choice of evaluation strategy. The research hypothesis is supposed to prove that risk perception varies amongst different services.

***Research hypothesis 2: The higher users' risk perception, the lower initial trust in the service.***

This research hypothesis is closely related to hypothesis 1, which means it also relates to the first overall research question. As mentioned in the previous paragraph, participants chose different evaluation strategies for the different websites that were tested in the contextual inquiry. They showed high levels of scrutiny when evaluating websites that are objectively of high risk. Previous research has shown that people increase safety measures when trust levels are low (Schnall et al., 2014). It appears reasonable to assume that participants have low initial trust in high-risk websites. This hypothesis, therefore, aims to prove that high-risk perception leads to low initial trust.

***Research question 1: To what extent does the first impression of a website influence trust judgments?***

In the contextual inquiries, participants were asked to visit several eHealth websites and report their thoughts about these websites. One question that was difficult to answer was to what extent the overall first impression influenced decision making about the trustworthiness of the websites. Two answers are thinkable: either the first impression has a major impact and additional website observations of for example trust signals only have a minor impact.

Alternatively, the first impression could be easily changed through later observations of the website. The question is essentially whether people continuously adjust their judgments or if cognitive inertia hinders adjustments of initial judgments. That means this research question will enable me to answer the fifth overall research question (*How do users evaluate trustworthiness? Is it a rational decision or an intuitive decision?*).

***Research hypothesis 3: Trust signals have an impact on trust.***

Several existing studies (e.g. Bernhardt & Felter, 2004; Corritore, Wiedenbeck, Kracher, & Marble, 2012; Song & Zahedi, 2007), as well as the contextual inquiries that are part of this dissertation suggest that this hypothesis is true. Existing studies, however, did not differentiate between different eHealth services, which is the added benefit of the present study. This hypothesis relates to the third overall research question of the thesis (*Which are the most influential trustee-specific trust antecedents with regards to eHealth services?*).

***Research hypothesis 4: The moderating effect of trust signals will be higher for high-risk services than for low risk services.***

With regard to research hypothesis 4, there is a discrepancy between existing research and findings of my qualitative study. Existing literature suggests that in the presence of high risk, people rely on intuitive decision making, whereas they apply rational reasoning when risk is low (Roghanizad & Neufeld, 2015). Contrary to that, findings of the contextual inquiries imply that participants spend more time and effort on the evaluation of high-risk websites. For example, they read external press reports about the service provider which was not the case regarding low-risk websites. The aim of this hypothesis is to validate the findings of the contextual inquiries.

***Research question 2: Does users' trust level impact on transaction intention?***

Regarding e-commerce, previous studies have shown that high trust leads to increased transaction intention (Kim & Koo, 2016). This effect remains to be tested in the context of eHealth. The results of the contextual inquiry partly support these findings. Whilst low trust led to low transaction intention, high trust only led to transaction intention if the participant saw a personal relevancy in the service or found the business model useful. This research

question does not relate directly to one of the overall research questions. However, it does indirectly expand the understanding of the larger concept of trust and its relation to people's behaviour.

***Research question 3: Which trust signal has the largest effect on trust? (Technical Adequacy, Appearance, Perceived Impartiality, Financial Risk, Safeguards & Trust Seals)***

In the literature review, I identified that many existing studies use survey items such as “perceived credibility” and “perceived ease of use” as antecedents of trust. I criticised that these items do not explain what led to “perceived credibility” and “perceived ease of use”. In order to gain a deeper understanding of the antecedents of trust, it is of great importance to have a closer look at design features and trust seals. This research question aims at closing the explained gap in the literature.

In addition to the above hypotheses and questions, the study examined how users' personal characteristics and experiences affect trust in eHealth services. These hypotheses and questions are important to understand whether trust in eHealth mainly depends on the service provider or on pre-existing aspects that cannot be influenced by changing website design or other features of the service. This question directly relates to the third overall research question of the thesis (*Which are the most influential trustee-specific trust antecedents with regards to eHealth services?*).

***Research question 4: Does users' trust propensity impact on trust in eHealth services?***

In existing studies, trust propensity has been found to moderate trust (Colquitt et al., 2007). The research question is included in this study in order to ensure that the effect of trust propensity does not overshadow other trust antecedents.

***Research question 5: Does web experience impact on trust in eHealth services?***

Corbitt and colleagues (2003) found that web experience has a significant effect on trust. Therefore, this variable was included to monitor any moderating effects.

***Research question 6: Do socio-demographics impact trust in eHealth services?***

This research question was added to gain a deeper understanding of factors such as age and education level on trust related to eHealth services.

***Research question 7: Does paranoia impact trust in eHealth services?***

Paranoia can be seen as a personal characteristic that is directly opposite to trust propensity. If a person scores high in paranoia, it might mean that this person finds it hard to develop trust in eHealth services and, as a result, moderate trust scores.

***Research question 8: Does personal relevancy impact trust in eHealth services?***

All tested websites refer to particular health scenarios, such as a specific disease or emergency. “Personal relevancy” means the participant and / or a relative or close friend have experienced this health scenario and, hence, the eHealth service would have been of personal relevancy. Participants may react differently in this case because they speak from personal experience. This may alter trust judgments.

***Research question 9: Does situational involvement impact trust in eHealth services?***

Situational involvement refers to the question of whether participants find the service offer relevant for patients. It is a personal opinion about the service offer in general (independent of design or other website specific features) and might, therefore, be a moderating variable to trust.

## **Study Design**

In certain instances, novel findings can be generated by applying existing study designs to a different study population or context. Although sub-categories of my research questions and hypothesis have been tested in the existing literature, no study was similar enough to make use of its study design. Especially a comparison between different eHealth websites and their related risk and trust levels has not been analysed so far. Questionnaire items related to trust,

on the other hand, have been developed by other researchers. Therefore, my study design is a combination of a novel experimental setup and established trust scales.

### **Online Experiment**

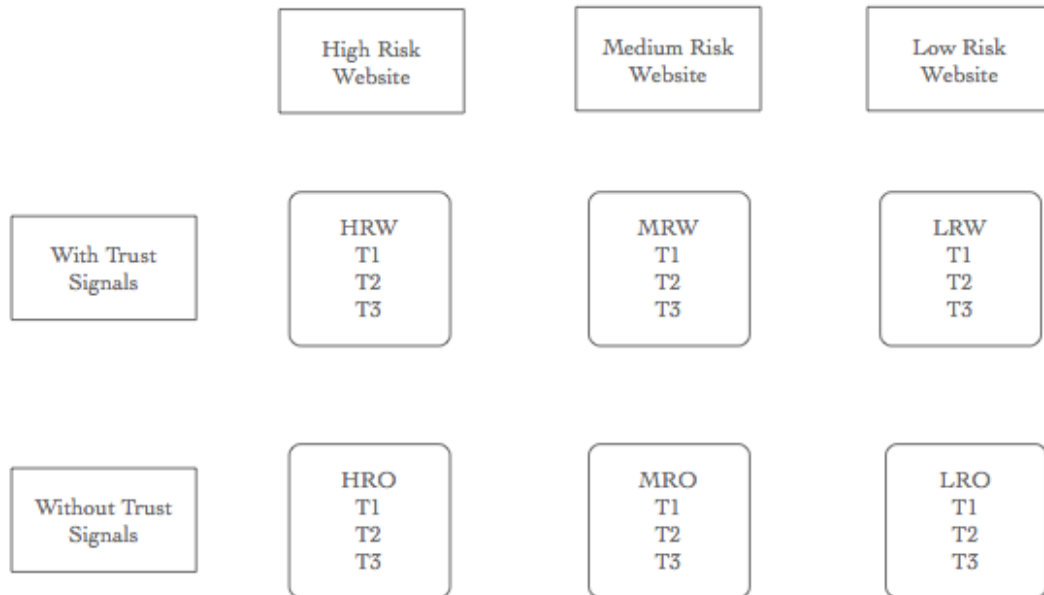
The main part of the study is an online experiment that was designed to answer research questions and hypotheses related to trustee-specific antecedents (RH1 – RH4; RQ1 – RQ3). This experiment was designed as a randomised controlled trial (RCT), which allows the researcher to draw conclusions about the effect of an intervention on a control group. A RCT was the method of choice because I wanted to compare a) websites of different risk level b) websites with trust signals and without trust signals. Qualitative methods would not have been suitable because they do not allow for statistical proofs of research hypotheses. Other quantitative methods such as surveys, correlation studies, or quasi-experiments are less suitable than RCTs when it comes to comparisons of the effect of different conditions. (Byrne, 2017)

I would now like to explain the setup of the experiment in greater detail. The experiment had six different conditions in total. On the one hand, there were three different websites that were used as stimuli. They differed from each other in terms of objective risk level: one high-risk website, one medium risk website, and one low-risk website. Each of these three websites existed in two different versions: with trust signals and without trust signals. The modifications will be explained in further detail in the section on stimuli. As a result, the six different conditions were:

- 1) High-risk website with trust signals (HRW)
- 2) High-risk website without trust signals (HRO)
- 3) Medium-risk website with trust signals (MRW)
- 4) Medium-risk website without trust signals (MRO)
- 5) Low-risk website with trust signals (LRW)
- 6) Low-risk website without trust signals (LRO)

Each participant was presented two of these six stimuli. The stimuli were randomly assigned to the participants. The following conditions were applied: no participant was presented two variations of the same website (i.e. HRW and HRO), but each participant got to see two different websites. The order of the websites was randomised, meaning that some

participants first got to see a high-risk website and then a low risk website, whereas other participants got to see a low risk website first.



Each of the conditions consisted of three steps, which are called T1, T2, and T3 in the corresponding diagram. Initially, in T1, participants received a written stimulus. This text explained a health scenario and a website that offers a solution to the health scenario. The text differed between health websites but was not modified differently for the signal / no signal condition. That means participants in the HRW and HRO condition received the same stimulus in T1. After reading the text stimulus, participants were asked a set of questions on trust and risk perception (more details on the questions can be found later in this section). The idea behind this approach is to be able to compare a risk evaluation on the respective services independent from website design and trust signals. The business model and the related risk of HRW and HRO for example are the same. So, measurements after T1 served as a benchmark for measurements after T2 and T3. What is more, the questions asked after T1 are supposed to test RH1 and RH2.

In T2, participants were shown a screenshot of the respective website for three seconds. At this point, participants of the “with trust signal” and “without trust signal” received different stimuli. After seeing the stimulus, they received questions on their trust ratings.

In T3, participants were shown the same website screenshot and additional screenshots of the respective websites for as long as they wished. Here again, the stimuli differed between the “with trust signal” and “without trust signal” conditions. For a last time, participants were asked to give trust ratings. RH3 and RH4 can be answered by analysing the results of the questions asked after T3 because this is the point in time when participants have been exposed to trust signals.

In contrast to T1 and T2, participants had to answer an additional set of questions after T3, which focussed on evaluations of design features and specific trust signals. This last set of questions aims at answering RQ3.

### **Moderators**

On top of the experiment and the questionnaire items related to it, participants were asked a number of questions that were supposed to shed light on potential moderating variables. These are related to RQ4 – RQ7. All of these potential moderating variables are essentially personal characteristics of the truster such as socio-demographics. What is more, they are all based on existing concepts from the literature such as trust propensity (Colquitt et al., 2007) and paranoia (Green et al., 2008). All participants received the same questions, no randomisation or variation in stimuli was applied.

RQ8 – RQ10 refer to attributes of the truster as well and they, too, are potential moderating variables. In contrast to RQ4 – RQ7 however, they are concerned with experiences and views related to specific health scenarios and, therefore, were asked in T1 of the experiment part of the study.

### **Study Flow**

In this section, I would like to explain the study chronologically from the perspective of the participant. The first set of question that every participant received were the questions on socio-demographics. Thereafter, the participants were prompted with the stimuli and questions related to the RCT: They received the first health scenario, which was randomly chosen from six available scenarios and comprised three stages as described above (T1, T2, T3). After answering the questions of the first health scenario, participants received the second health scenario with related stimuli and questions. After finishing two health scenarios, participants were directed to the trust propensity scale. After the trust propensity

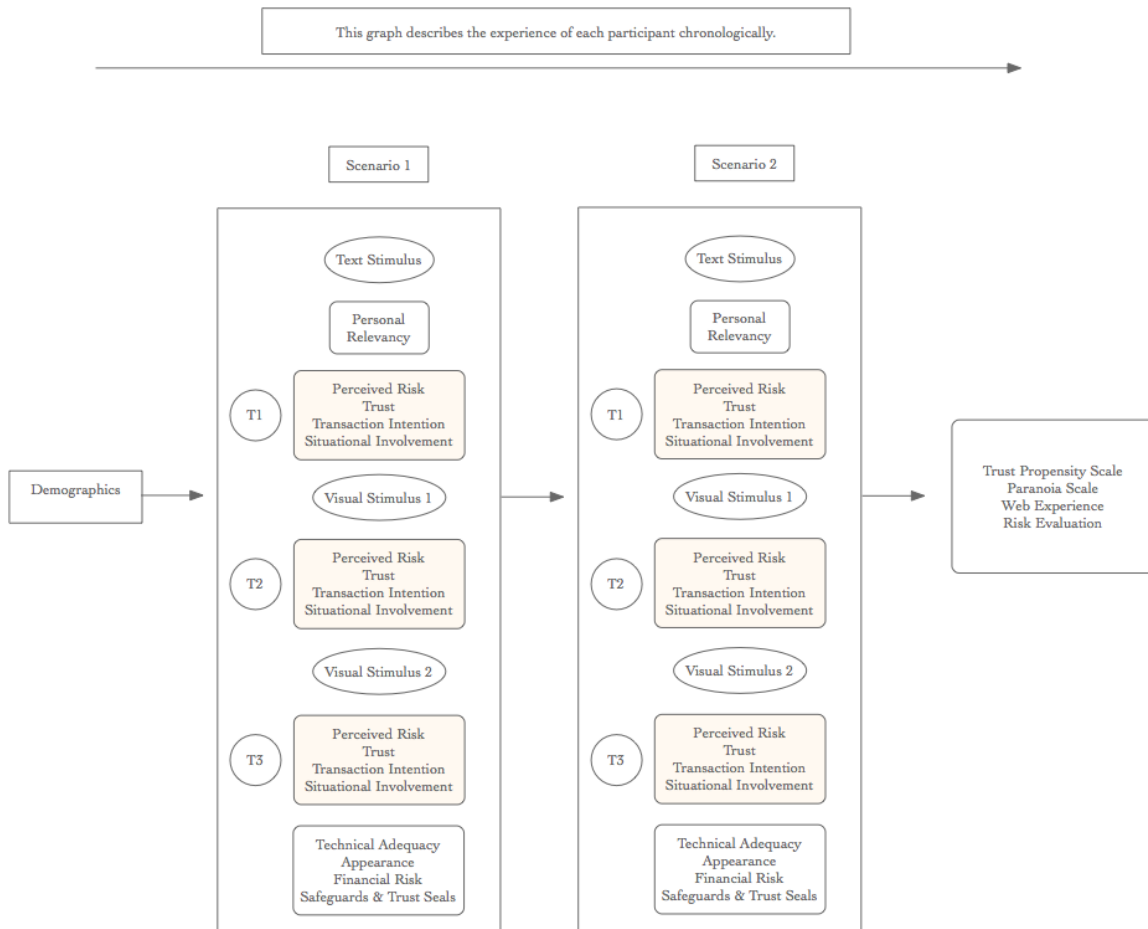


scale, they were asked to answer questions of the paranoia scale. Lastly, they had to answer questions on their own web experience and evaluate the risk of several eHealth offers which were unrelated to the experiments.

The order of the items of the study was for several reasons. The social-demographic part had to be in the beginning because it was used as a filtering mechanism for suitable participants. If participants were underage, not fluent in German, or had a mental or psychiatric disease, they were automatically excluded from the study.

The trust scale, the paranoia scale, and the risk evaluations were purposely asked at the end of the study, in order to avoid priming effects that may influence the results of the experiment. At the same time, the experiment may have a priming effect on the answers to the questions of the trust scale and the paranoia scale. Since the novel aspect of this study is the experiment and not the trust scale or the paranoia scale, it was more important to avoid priming effects on the experiment.

The order of the stimuli in the experiment had following intention: The text stimulus was supposed to test risk and trust ratings related to the business model of the healthcare service. The first visual stimulus was meant to enable measurements of the first impression of design features and “feel” of the websites. The second visual stimulus was intended to give participants the chance to rationally evaluate individual features of the respective website. In the sum, asking the same questions after exposing participants to different stimuli aimed to measure whether participants change their mind when given additional information or whether a high degree of cognitive inertia exists. Another intention of the design was to measure whether intuitive reasoning (mainly influenced by first impression) or rational reasoning (mainly influenced by stimulus T3) has a greater impact on final trust judgements.



## Variables and Applied Scales

The experimental setup of this study is novel, but the research scales are largely adopted from existing studies, which means their reliability and validity have already been proven. The exact questions can be found in the attachment.

The independent variables are the different treatment conditions of the experiment:

- 1) High-risk, medium-risk, and low-risk website
- 2) With trust signals and without trust signals

The dependent variables are:

- 1) Trust: The aim of this scale was to measure trust judgments of each website at T1, T2, and T3. I used two trust scales by McKnight (2002) and by Pappas (2016) as the basis for the trust scale in the experiment. Both scales follow a very similar logic. They use statements

on general trustworthiness combined with statements on sub-constructs of trust, namely benevolence, integrity, and ability. The scale by Pappas (2016) contains four statements, whereas the scale by McKnight (2002) contains eleven statements. Eleven items would have been too much for the experiments since the same set of statements had to be rated six times in total. I chose eight statements altogether. I adjusted the wording slightly since the Pappas (2016) scale referred to online shopping and the McKnight (2002) scale referred to online legal advice, whereas the present study is focussed on eHealth.

2) Perceived risk: Both McKnight and colleagues (2004) and Kim and Koo (2016) studied the relationship between risk and trust in the online context in quantitative studies. In both cases, the researchers developed “perceived risk” scales. Neither of the scales was, however, fully compatible with my own research model. McKnight and colleagues (2004) studied general web risk and not risk related to a particular website. The present study is focussed on trust in specific websites and, therefore, the wording of the questionnaire items must account for that. Kim and Koo (2016) conducted a study focussed on e-commerce and, as a result, the questions targeted aspects related to payment data and good bargains. What is more, they used questions instead of statements, whereas my own study was predominantly based on statements and agree / disagree judgements. Since neither scale was ideally suitable, I developed a scale with slightly different wording that is fitting for individual, eHealth-focussed websites.

3) Technical adequacy and appearance: These two scales are based on scales by Bliemel and Hassanein (2007). The appearance scale was adopted without any changes. The technical adequacy scale was shortened from six items to two items, partly to keep the overall questionnaire at a reasonable length and partly because the original statements referred to aspects such as loading time of the website which were not applicable to the experiment.

5) Financial risk: The items of this scale were developed by Hong (2015). I shortened the scale from three down to two items because the third item overlapped with an item from the trust (integrity) scale.

6) Safeguards and trust seals: The items related to safeguards and trust seals are not directly related to an existing scale. I developed four statements that represent findings on trust seals

in the contextual inquiries. These include independent accreditation, affiliation with known institutions, user reviews, and affiliation with reputable doctors.

These were the moderating variables:

1) Trust propensity: The trust propensity scale is based on a scale by McKnight and colleagues (2004). I adopted it without any changes. It comprises several sub-constructs: Faith in humanity (general), faith in humanity (professionals), and trusting stance.

2) Paranoia: I used a validated paranoia scale by Green and colleagues (2008). The original scale had two separate 16-item parts: one that focusses on social reference and another one that focusses on persecution. The scale that is of greater relevance to this study is the scale that is focussed on persecution because the main question is whether participants are likely to believe that someone (in the case the service provider) is willing to do them harm of any shape or form.

3) Web experience: I chose a scale by McKnight and colleagues (2004) as the basis. In the original version, the question asked how much time participants spend on average per week on certain tasks. I changed the wording to how much time they spent in the last week doing certain web activities, in order to avoid participants making mistakes by trying to generalise their internet usage. In addition, I asked “Compared to other weeks, did you spend more / same / less time on the internet?” to eliminate answers that do not represent normal usage. What is more, I added a question on eHealth usage in particular.

4) Personal relevancy: Personal relevancy refers to whether the participant has experienced the health scenario that is used in the experiment themselves or whether a close friend or relative experienced the situation. Two questions cover these two aspects. An additional question asks whether the person has previous experience with the usage of the presented eHealth website. All questions were designed by myself particularly for the experiment. The questions were fitted to each health scenario, meaning that each of the questions exists in three versions (high-risk website, medium-risk website, low-risk website).

5) Situational involvement and transaction intention: These two constructs comprise one question only each. Situational involvement asks whether the participant can see the

relevance of the service. This question is important because the contextual inquiries suggested that situational involvement is a moderating parameter between trust and transaction intention.

## **Instrumentation**

For the following items, a five-point Likert scale (1 strongly agree / 5 strongly disagree) was used: perceived risk, situational involvement, transaction intention, trust, technical adequacy, appearance, perceived impartiality, financial risk, safeguards and trust seals, paranoia, and trust propensity. Likert scales are commonly used in trust research. There is some variation in the number of scale points (usually between four and seven points), but the Likert scale is the most accepted rating scale in this field (see for example Hong, 2015; Pearson & Raeke, 2000; Sillence, Hardy, & Briggs, 2013) and it was also applied in all but one of the scales that I used as the basis for my variables.

The three questions related to personal relevancy involved a binary (yes / no) scale because they referred to whether the participant has previous experience with the health scenario.

The scale for web experience involved frequency brackets: never, one to three times per week, four to six times per week, seven to ten times per week, and more than ten times per week.

Lastly, the exercise on service risk comparisons was a sorting exercise, in which participants had to push labelled cards up and down. This type of rating scale was chosen because it gives a direct visual representation of the ratings.

## **Stimuli**

The stimuli which are used in the study are screenshots of websites that have been used in the contextual inquiries as well. The selection was based to a large extent on the reactions of users to the websites in the contextual inquiries. One of the hypotheses derived from the contextual inquiries is that perceived risk leads to decreased trust in a service provider. Therefore, three websites with varying amounts of risk are associated with them.

## **Choice of Websites**

The first company that shall be introduced is Onmeda. Onmeda was chosen because of its low risk. The company offers a wide range of articles on health-related topics and could be labelled as “health advice website”. Onmeda poses a low risk on the user because no personal information or payment data is needed to use the website. What is more, the information which is provided on the website can be validated on a wide range of similar websites. Accordingly, the user is not dependant on Onmeda in any way. What is more, Onmeda is affiliated with a well-known German women’s magazine called *gofeminin*, which supports the credibility of the website.

The second website is called Medigo. Medigo is a website on which users can book medical travel to a variety of clinics all over the world. The company is a travel agent for medical purposes. Medigo does not offer any medical treatments themselves. On the one hand, reliance on Medigo can be seen as risky because medical travel carries all the common risks of medical procedures and in addition the risk of unknown health standards in foreign countries. This risk cannot be attributed to Medigo as a travel agent, but rather to the clinics. It remains the risk that one relies on Medigo’s pre-selection of clinics. Also, users need to provide substantially more data to make use of Medigo’s offer than to make use of Onmeda’s offer. Payment data, personal data, and some limited information on one’s medical condition must be provided. Lastly, Medigo is based in Germany. Location was one of the criteria that participants of the contextual inquiry used to evaluate riskiness.

The third company that was used for the survey is called DrEd. This company offers both prescriptions for and the delivery of certain medications. The risk involved with DrEd is high because the user relies solely on DrEd’s online diagnosis algorithm for diagnosis and prescription. In addition, the risk of over-treatment is high due to the fact that DrEd is in charge of both prescription and sale of the drugs which leads to perverse incentive structures. Another factor that adds to the riskiness is that DrEd is based in the UK and, therefore, does not fall under the same regulatory framework as the German pharmaceutical market. Also, in terms of required data the risk is high: patients need to submit payment data, health data, and personal data.

In sum, Onmeda can be classified as a low-risk website, Medigo as a medium to high-risk website, and DrEd as a high-risk website. These judgments are firstly based on objective criteria regarding the amount of data needed to use the service and dependence on the provider. Secondly, it is based on the judgments of participants from the contextual inquiries. Since the sample of the contextual inquiries was too small to deliver representative results, I have included an item on “perceived risk” in the survey design.

## **Modifications**

One of the research questions of this dissertation is to what extent trust features such as user reviews, certifications, and affiliation with known institutions impact the perceived trustworthiness of the service provider. In order to measure the impact of trust features, I created two versions of the websites I had chosen as stimuli. In one version, users could see the original website and in the other version, the user would be presented an edited version. In other words, I applied A/B testing.

First of all, I took screenshots of the homepage of each website and two to three additional pages. Then, I used the software editing programme Adobe Photoshop to remove the most important and prominent trust features. Since most of the features are relatively small, the overall design of the websites was not influenced. Also, the background was in each case in single colours, so the trust features could be removed without leaving any visible traces.

In the following paragraphs, I will describe the alteration that I have made to each website. All screenshots can be found in the attachments.

With regards to DrEd, I removed logos of TV stations and newspapers from the homepage that served as proof for media coverage. The media coverage included well known German platforms such as Frankfurter Allgemeine, Bild, Spiegel, RTL, and ZDF. What is more, I removed the company’s hotline number and the label of Trust Pilot, which is an external user review platform. DrEd’s score on Trust Pilot was at that point a 9.5 out of 10. On one page, the service was described in bullet points. I removed the term “German” from the descriptions because, in several instances, the participants of the qualitative study have mentioned that “Germany” is associated with good quality and trustworthiness. Additionally, I erased quality seals of Norton and Care Commission and user reviews.

The alterations on the Medigo website were similar to the alterations on the DrEd website. I removed the hotline, media coverage logos, accreditations, and user reviews. Medigo's media coverage included well-known international media platforms such as Daily Mail, CNN, and The Guardian. Their quality seals covered both national and international accreditations. Amongst them were Technischer Überwachungsverein (TÜV), National Committee for Quality Assurance (NCQA), International Standards Organization (ISO), Care Quality Commission (CQC), and Joint Commission International (JCI).

In the case of Onmeda, the approach differed slightly from the other two websites. Onmeda only makes use of a few trust signals. The business model is not reliant on transactions, but on advertising. Hence, several large ads are visible on the page. Advertising was classified as a factor that reduces trustworthiness by the participants of the first study. Therefore, I created one version of Onmeda which is free from advertising by taking a screenshot whilst running a software called Adblock on my laptop. The second version included all ads, and in addition, I removed the only two accreditations (Hon Code and Afgis) and links to Onmeda's social media presence. Lastly, I erased the logo of GoFeminin. GoFeminin is a well-known German online portal. It is the parent company of Onmeda (see <http://unternehmen.gofeminin.de/unternehmen>). In the qualitative interviews, the relationship to GoFeminin had been mentioned as a trust-increasing factor.

## **Participants**

### **Sample Selection**

The overall aim was to recruit a sample that represents the German population because diseases can happen to anybody and, therefore, anybody is a potential user of health-related websites. Put differently, I intended to include participants of all age groups and social classes as well as males and females.

There were, however, several exclusion criteria that were used to eliminate unsuitable participants. The first exclusion criterion was age. Only participants above 18 years of age were accepted. The second exclusion criterion was knowledge of the German language. Only participants who were fluent in German were accepted. Lastly, participants with known psychiatric or neurological disorders were excluded from the study. All of these items were included as a screening question in the first section of the study.



## **Sample Recruitment**

I applied to different recruitment strategies. Firstly, I applied snowball sampling through social media. I contacted around 300 of my Facebook friends, all of which I knew they speak German fluently. Also, I asked my contacts to share the study with their own contacts. The template of the text I used can be found in the appendix. Out of these approximately 300 people, 44 took part in the study and 29 were included in the final analysis. The participants who were recruited through snowball sampling were offered to take part in a lottery for two 25 Euro vouchers for the online shop Amazon. In order to take part in the lottery, the participants had to enter their email addresses. The email addresses were saved separately from the study results of which participants were informed prior to entering the email address. Hence, their privacy was maintained.

In addition to snowball sampling, I used an online panel. The panel provider I used is called Gapfish. It is a Germany based company with 121,000 members in Germany. I provided the above-mentioned selection criteria and Gapfish invited suitable members to participate in my study. Since the snowball sampling attracted mainly participants around the age of 20 to 35, Gapfish was asked to invite primarily people of other age groups. The participants got paid a small amount for the participation in each study and Gapfish received a provision per participant. In total, 570 people participated in the study and 256 of them were included in the final analysis.

Although Gapfish participants and snowball sampling participants were asked the same questions during the study, the data was collected separately. This was necessary because in the Gapfish version I had to include a tracking system with participation ID to enable Gapfish to determine which participants have finished the study and deserve the payment. After cleaning the data, I merged the Gapfish and the snowball sampling datasets.

The data was cleaned according to following criteria: only participants who answered all questions were included. What is more, straight-liners and similar obvious fake answers were excluded. Lastly, I removed any participant who took less than ten minutes to complete the study. This time estimate was based on trial tests.

## **Procedure**

The study was entirely online based, which means no personal contact took place between researcher and participant during the study. The procedure was slightly different for the two types of sampling.

Snowball sampling participants received an invitation to take part in the study either directly from me or forwarded from a contact of mine. Once they decided to take part, they clicked on the link where they received additional information about the study and were asked to agree to take part. Thereafter, the actual study took place. At the end of the study, participants were asked whether they want to take part in a lottery for two 25 Euro Amazon vouchers. Lastly, they were thanked for their participation.

The online panel participants were all registered users of Gapfish. On the Gapfish website, they had a user account where they could choose studies to take part in. Gapfish pre-selected fitting users and invited them to my study. Just like snowball sampling participants, they received further information and had to agree to the consent form. They completed the study. If they met the exclusion criteria, they were automatically redirected to the Gapfish website. Other than the snowball sampling participants, they were not invited to take part in the lottery after completing the study. Instead, they were thanked for participation, they received a remuneration to their Gapfish account, and were redirected to the Gapfish website.

## **Pilot Study and Adjustments**

I conducted two pilot studies. The first one was concerned with the understandability and readability of the content of the study. Three acquaintances were asked to complete the study and to give feedback. The result was that the overall study design and tasks were both understandable and readable. Participants made a number of suggestions on the wording, which were integrated into the final study.

The second pilot was related to technical aspects of the study. I collaborated with a German panel data company called Gapfish on the data collection. For billing and tracking purposes, each participant received a code. With this code, Gapfish could track which participants were excluded due to exclusion criteria and which users did not finish the study. We conducted a

number of test runs to verify that the technical setup runs smoothly. I used the same survey software for snowball sampling participants, so the technical setup for both groups was verified through this pilot study.

Lastly, I would like to mention a change that was made in the early stages of data collection. Gapfish initially invited a small number of people to the study in order to be able to correct possible errors. At first, the vast majority of participants answered yes to the question “do you suffer from one or several neurological or psychiatric diseases?”. Since this was an exclusion criterion, all of these participants were excluded from the study. According to Gapfish, it was unlikely that this result was true. We changed the wording of the question to “Do you suffer from one or several neurological or psychiatric diseases? Example: Parkinson’s, epilepsy, multiple sclerosis, dementia, schizophrenia, psychosis”. After changing the wording, the number of participants who answered “yes” reduced but remained higher than expected.

Possible explanations are that people either purposely answered untruthfully because they thought that the question was related to an inclusion criterion. Alternatively, participants might not have read the question properly in order to complete the study as quickly as possible. Lastly, it is thinkable that participants did not know what exactly is meant by neurological and psychiatric disease. In either case, this incident sheds a negative light on the data quality.

## **Internal and External Validity**

External validity refers to the generalisability of study results to a wide group of people.

The first external validity issue I would like to discuss is sampling bias. Most quantitative studies aim to provide representative results, which is only possible if the sample of the study represents general society. In reality, most studies have a sampling bias to some extent, which means that certain groups of society are under or over-represented in the study (Kovera, 2012; Leighton, 2012a). In the present study, there were two types of participants: snowball sampling participants and panel data participants. With regard to snowball sampling, participants were limited to a young age group, as well as above average educated. The panel provider claims a great representativeness of their panel, but if one questions the

motivation for people to participate in online panels, it becomes clear that small financial rewards play a major role. The reverse conclusion is that people with sufficient income would not participate in an online panel.

Another bias related to participants is selection bias. Selection bias means that participants with different characteristics are not equally distributed across experimental conditions (Kovera, 2012). Since all the experimental conditions of the present study were randomly assigned, the risk of selection bias was kept as low as possible.

The last type of biases that is relevant to this study is response bias. Response bias refers to dishonest answers to survey questions to please the researcher or fulfil socially desirable criteria (Kovera, 2012). Since this study was anonymous and answered online, the probability of response bias is low.

Probably the greatest external validity issue of this study is ecological validity. Researchers speak of ecological validity when statements or behaviours of the research population could be replicated in the “real world” (Gouvier, Barker, & Musso, 2012). In the case of this study, the real-world scenario involved falling sick and searching for medical help online. It was not feasible to recruit participants who meet this exact criterion. Hence, it remains unclear whether the responses of healthy people are transferable to people who are ill.

In contrast to external validity, internal validity is not concerned with generalisability, but with inferences about causality of the experiment. Internal validity is dependent on the procedures and operations related to a research, as well as the choice of design and measurement of variables (Leighton, 2012b).

In many cases, internal validity is reduced because participants’ natural reaction is influenced. This can happen because they learn which condition they are in which may lead to demoralisation or rivalry between participants of different conditions (Leighton, 2012b). Since participants of this study were not informed about that there are different experimental conditions, this threat is not present for this study. What is more, participants are very unlikely to know each other and influence each other through discussions about the study. A thinkable risk to internal validity is that participants had to answer the trust scale and the

perceived risk scale six times in total. This may have led to reduced concentration on the questions and a tendency to speed through the responses.

Another common problem related to internal validity is time sequence (Leighton, 2012b). In other words: which variable caused which to change? Which variable was there first? This is also the reason why experiments are generally more reliable than quasi experiments when it comes to proving causality. The main dependent relationship that this study examined is that between trust judgements of high, medium, and low risk websites. It is very unlikely that anything other than the treatment condition could have had an impact differences in trust judgements and the time sequence is fixed through the experimental design (meaning that reverse causation is not possible).

# Analysis of Confirmatory Study

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In the following section, I will present the results of the statistical analysis of the online experiment data. I conducted the analysis in collaboration with Olga Kononykhina, a Ph.D. student at Hertie School of Governance in Berlin. We used the statistics software R for the analysis. I gave all the conceptual input; we selected together which statistical test is suitable for each research hypothesis, and Olga Kononykhina was in charge of creating the code in R. I will present the results arranged by research question / hypothesis.

## Descriptive Statistics

In this section I would like to provide the reader with demographic information and descriptive statistics. In total, 285 people were included in the final analysis (for details in relation to sampling and exclusion due to certain condition see methodology chapter). I would first like to report on the age of participants. 18.9 percent of participants were between 18 to 24 years of age, 15.8 percent between 25 to 34, 17.5 percent between 35 to 44, 12.2 between 45 to 54, 14.4 percent between 55 to 64, and 3.5 percent between 65 to 74 years of age. There were no participants below 18 years of age or above 74 years of age.

In terms of gender, 54.7 percent of participants were female, 44.9 percent were male, and 0.3 percent transgender. With regards to education, 11.6 percent of participants had no degree, 30.5 percent had a high school degree (German Haupt- or Realschule), 17.1 percent had the German equivalent to an International Baccalaureate (Abitur), 17.9 percent had an undergraduate degree, 20.7 percent an postgraduate degree, and 2.5 percent a PhD or doctorate degree. Surprisingly, nobody indicated that they have a vocational degree, which is generally common in Germany and the number of people with a school degree, but no further education is very high. The reason may be that the online panel attracts people with poor education that earn extra money by taking part in such surveys, which is a limitation that I have mentioned in the methodology section as well.

Lastly, I would like to present the findings on current employment status. 50.2 percent of participants indicated that they are currently employed, 8.4 percent were self-employed, 3.2

percent unemployed, 2.5 percent housewife / men, 15.1 percent were students, 19.3 percent pensioners, and 1.4 percent unable to work (e.g. due to disability).

Age	%	Degree	%	Employment Status	%
18-24	18.9	No degree	11.6	Employed	50.2
25-34	15.8	High School	30.5	Self-employed	8.4
35-44	17.5	“Abitur” / IB	17.1	Unemployed	3.2
45-54	12.2	Undergrad	17.9	Housewife/man	2.5
55-64	14.4	Postgrad	20.7	Student	15.1
65-74	3.5	PhD / Doctorate	2.5	Pensioner	19.3
				Unable to work	1.4

## Results of Online Experiment

*Research hypothesis 1: Users’ risk perception of eHealth services depends on specific service offer.*

RH1 comprises three dependent variables: The risk perception of each service based on initial exposure. In T1, there is no difference between the “with trust signal” condition (W) and “without trust signal” condition (O). Therefore, we combined LRW1 and LRO1 to a single condition called LR1 and adjusted the other conditions accordingly to MR1 and HR1. Since we were analysing the risk perception construct only to answer RH1, the three final variables were LR1\_risk, MR1\_risk, and HR1\_risk. We used a Welch Two Sample t-test to conclude whether there are any significant differences in the risk judgements between conditions. We considered ANOVA, but it could not be applied because each person answered risk questions on two of the conditions.

The mean of LR1\_risk is 3.44, the mean of MR1\_risk is 3.67, and the mean of HR1\_risk is 3.66. The t-test results confirm that there is a statistically significant difference between risk perceptions in the LR and MR condition with  $t=-2.81$  and a significance of  $p= 0.005$ . Also, the difference in risk perception between LR and HR is significant with  $t = -2.76$  and a

significance of  $p = 0.006$ . We could not find a significant difference in risk perception between HR and MR. The t-test resulted in  $t = 0.16$  and a p-value of 0.872.

This means participants perceived the high-risk service offer and the medium risk service offer as more risky than the low risk service offer whereas the high risk and the medium risk condition were not perceived as different at a statistically significant level. Accordingly, RH1 is only partly supported.

***Research hypothesis 2: The higher users' risk perception, the lower initial trust in the service.***

We used Pearson's product-moment correlation to determine whether higher risk perception leads to lower initial trust in the service. We used six variables. First of all, the three risk perception variables that were explained in RH1 and the trust rating of each service offer at T1. Similar to RH1, the W and O conditions were combined to LR, MR, and HR because the trust signals were only displayed in T2 and T3. The resulting trust variables are called LR1\_trust, MR1\_trust, and HR1\_trust.

The correlations were determined between the risk and the trust rating of each condition. We found significant correlations in each condition. In the low risk condition, there is a correlation between risk and trust of 0.67 and a p-value of  $< 2.2e-16$ , in the high risk condition there is a correlation of 0.69 and p-value of  $< 2.2e-16$ , and in the medium risk condition the correlation is 0.70 and the p-value  $< 2.2e-16$ . The correlation values are positive, but the questions were coded in such a way that 1 equals high trust and low perceived risk. That means the higher perceived risk, the lower initial trust in the service. This means the research hypothesis is fully supported by the results.

***Research question 1: To what extent does the first impression of a website influence trust judgements?***

We answered this research question by conducting Paired t-tests between trust measurements of every single condition (LRW, LRO, MRW, MRO, LRW, LRO) at T1 and T2. The results show whether a participant's judgement of a service changed after seeing the website for a brief moment.



In the LRO (p-value = 0.027, t-value = 2.24), HRW (p-value = 0.011, t-value = 2.56), HRO (p-value = 0.005, t-value = 2.87), and MRO (p-value = 0.001, t-value = 3.43) conditions we could find a significant effect of introduction of the website image on trust in the website. In the remaining conditions, no significant effect could be found. The t-values of the remaining conditions were 1.1493 (LRW) and 0.54319 (MRW). The p-values were 0.2535 (LRW) and 0.5882 (MRW).

In the sum, this means that sometimes participants changed their mind about an eHealth service trustworthiness after seeing the design and looks of the website.

***Research hypothesis 3: Trust signals have an impact on trust.***

In order to test this research hypothesis, we conducted Welch Two Sample t-tests of trust judgements between the “with trust signal” and “without trust signal” (W and O) condition of each eHealth service at T3. This means we formed six dependent variables: LRO3\_trust, LRW3\_trust, MRW3\_trust, MRO3\_trust, HRW3\_trust, and HRO3\_trust. We did not only test the hypothesis by looking at each service individually, but we also tested whether there is an overall effect of trust signals on trust by combining all the W samples to LRW3.HRW3.MRW3\_trust and the O samples to LRO3.HRO3.MRO3\_trust and conducting a Welch Two Sample t-tests with these variables.

The means of LRW3 and LRO3 are 2.67 and 2.73 and the t-value is -0.52 with a non-significant p-value of 0.602. The means of HRW3 and HRO3 are 2.92 and 2.83 and the t-value is 0.77 with a non-significant p-value of 0.441. The result of the t-test of the medium risk condition resulted in means of MRW3 and MRO3 of 2.76 and 2.88 with a t-value of -1.02 and a p-value of 0.308, meaning the effect is statistically non-significant.

In the test that combined all eHealth services, the mean of LRW3.HRW3.MRW3\_trust is 2.82 and the mean of LRO3.HRO3.MRO3\_trust is 2.88. The t-value is -0.65 with a statistically non-significant p-value of 0.518.

This means that in this particular experimental setup, the effect of trust signals on perceived trust cannot be confirmed.

***Research hypothesis 4: The moderating effect of trust signals will be higher for high-risk services than for low risk services.***

Research hypothesis 3 suggests that trust signals do not have a moderating effect on trust. Therefore, research hypothesis 4 is not supported by the results of the study.

***Research question 2: Does users' trust level impact on transaction intention?***

The dependent variable transaction intention is represented through one single question: If you were in the described situation, would you use the eHealth service? The question was asked three times in each condition: at T1, T2, T3. In order to answer the research question, we calculated the Pearson's product-moment correlation of the transaction intention scores and the trust scores of each condition. The W and O conditions were summarised, which means the six used variables were LR\_trust, MR\_trust, HR\_trust, LR\_transaction, MR\_transaction, and HR\_transaction.

We found a positive, statistically significant relationship between trust and transaction intention for each condition. The p-values were  $< 2.2e-16$  in each condition and the correlation values were 0.72 (LR), 0.75 (HR), and 0.78 (MR), which can be interpreted as a strong, positive correlation. That means the more participants trusted a service, the more likely they were to indicate that they would use the service in real life.

***Research question 3: Which trust signal has the largest effect on trust? (Technical Adequacy, Appearance, Perceived Impartiality, Financial Risk, Safeguards & Trust Seals)***

Research hypothesis 3 showed that there is no significant impact of the existence of trust signals and trust in this particular experimental setup. As a result, it makes little sense to explain which trust signal has the greatest moderating effect.

Therefore, we approached the analysis from a slightly different angle. We compared the W and O conditions by applying Welch Two Sample t-test on the ratings of Technical Adequacy, Appearance, Perceived Impartiality, Financial Risk, Safeguards & Trust Seals.

The aim was to examine whether the existence of trust signals is reflected in the participants' perception of the website's quality.

The results were mainly negative. In following cases, we could not find a significant difference in the ratings of the W and O condition: Technical Adequacy (p-values: HR = 0.95, MR = 0.83, LR = 0.92), Appearance (p-values: LR = 0.737, HR = 0.897, MR = 0.315), Financial Risk (p-values: LR = 0.205, HR = 0.874, MR = 0.992), Impartiality (p-values: HR = 0.862, MR = 0.966), and Safeguards & Trust Seals (p-values: HR = 0.898, MR = 0.0709). The only cases in which we could find statistically significant results are: Impartiality (p-value: LR = 0.004) and Safeguards & Trust Seals (p-value: LR = 0.038). That means in the vast majority of cases the actual presence of trust signals on the website did not lead to statistically different ratings of the websites' perceived display of trust items.

Lastly, we analysed the relationship between all the design-related judgements and trust combined by applying a Pearson's product-moment correlation test. We found a high positive correlation between design ratings and trust ratings ( $cor = 0.72$ ) at a significance of  $p < 2.2e-16$ . In conclusion, this means that perception of quality and design highly correlated with trust, but participants are more influenced by the overall design rather than the presence or absence of particular trust features.

#### ***Research question 4: Does users' trust propensity impact on trust in eHealth services?***

Trust propensity is a personal characteristic and was captured through a scale that each participant filled in once. We measured the moderating impact of trust propensity on trust through Pearson's product-moment correlation. Since each participant answered the questions on trust propensity once, but answered questions on trust for two conditions, we separated the final analysis by LR, MR, and HR. This way, we could be sure that one trust propensity measurement is matched with a single trust measurement.

Trust and trust propensity were positively correlated in each condition. All p-values were statistically significant: 0.02788 (LR), 8.516e-05 (HR), and 2.339e-07 (MR). The cor-values can be interpreted as low, positive correlation: 0.1617041 (LR), 0.2783191 (HR), and 0.3636015 (MR). That means that the higher participants' trust propensity, the more likely they were to give high trust ratings to eHealth services.

***Research question 5: Does web experience impact on trust in eHealth services?***

Web experience was represented through questions on usage frequency of a range of different online services. We calculated a mean score to create a single web experience variable. We used Pearson's product-moment correlation in order to analyse the relationship between web experience and trust. As in the case of previous research questions, we divided analysis according to risk level into the groups LR, MR, and HR.

The results were mixed. We found a weak negative correlation for MR ( $cor = -0.22$ ) and HR ( $cor = -0.1488219$ ). The correlations are statistically significant at  $p = 0.002$  (MR) and  $p = 0.038$  (HR). Only with LR we could not find a statistically significant relationship ( $p = 0.084$ ).

The results suggest that more experienced users are more cautious when it comes to eHealth services with elevated risk levels.

***Research question 6: Do socio-demographics impact on trust in eHealth services?***

With regards to gender, we conducted a two-sample t-test. Only two participants answered “other” to this question, therefore we neglected this category and evaluated the results for male and female only. We tested the trust scores of HR, MR, and LR separately. We could not find any significant effect of gender on trust.

For education, we conducted a Tukey multiple comparisons of means. Here, too, we separated the results according to HR, MR, and LR. We could find a significant effect for two education levels of the HR condition, but no significant effect for the other conditions. The averages that are significantly different are education level 3 (a-levels) from education level 4 (vocational training), and education level 3 (a-levels) from education level 5 (Bachelor).

We could not find any significant effect of age or employment status on trust.

***Research question 7: Does paranoia impact on trust in eHealth services?***

In order to measure the effect of paranoia on perceived trust in eHealth services, we used two different approaches. The first approach was a Pearson's product-moment correlation test. For the paranoia variable, we used the means of each person's paranoia scale and for the trust variable the results of the trust ratings of each eHealth scenario (LR\_trust, MR\_trust, HR\_trust). The correlation analysis did not yield any statistically significant results, meaning that a linear correlation is unlikely. The p-values were 0.733 (LR), 0.252 (HR), 0.904 (MR) and the cor-values were 0.02 (LR), 0.08 (HR), and 0.01 (MR).

In addition to a correlation analysis, we conducted a Welch two sample t-test between the trust ratings of the 10% most paranoid participants and the trust ratings of the 90% least paranoid participants. 10% of the most paranoid people are those that have a sum score on the paranoia scale 48 and lower. The result was similar to the result of the correlation: The 10% of participants with highest paranoia did not give significantly different trust ratings as compared to the participants with lower paranoia. The t-values were 0.17 (LR), 0.22 (MR), and -1.10 (HR). P-values were 0.867 (LR), 0.824 (MR), and 0.277 (HR).

In conclusion, paranoia is unlikely to have an impact on trust in eHealth services.

***Research question 8: Does personal relevancy impact on trust in eHealth services?***

Personal relevancy stands for participants experience with the eHealth service or the disease. The variable consists of three binary yes / no questions on whether the person has had the disease in question, whether a close relative had the disease, or whether the participant has used the website before. We analysed the research question by conducting Welch Two Sample t-tests between one group of participants that answered all questions with "no" and a second group of participants who answered at least one question with "yes".

None of the t-tests had statistically significant results, meaning that an impact of personal relevancy on trust cannot be assumed. The p-values were 0.92 (LRW), 0.308 (LRO), 0.481 (HRW), 0.473 (HRO), 0.129 (MRW), and 0.581 (MRO).

***Research question 9: Does situational involvement impact on trust in eHealth services?***

To answer research hypothesis 9, we conducted a Pearson's product-moment correlation between a combined variable called “trust” that contains all trust ratings. We did so by combining LR\_trust, MR\_trust, and HR\_trust. Situational involvement is a dependent variable that comprises LR\_situation, MR\_situation, and HR\_situation. The correlation analysis could confirm linear correlations in each of the conditions. The corresponding p value in each condition was  $< 2.2e-16$  and the cor-values were 0.81 (LR), 0.77 (HR), and 0.76 (MR).

The situational involvement construct consisted only of the question “I can see how this service is relevant for patients”. This means in this experimental setup, there is a significant linear correlation between finding an eHealth service relevant for patients and trusting that service.

# Discussion

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## Introduction

In the following chapter, I would like to discuss the results of the three empirical studies. I have started this dissertation by highlighting a gap in the literature, namely a lack of understanding of trust in relation to online-based healthcare services. Specifically, I have highlighted trust in the online world is rarely studied at the necessary level of complexity.

On the one hand, previous research has paid little attention to the significance of individual trust signals on websites that the service provider uses to indicate their trustworthiness. These may include a variety of items such as design elements, photos, trust seals, media coverage, and photos. What is more, it is unclear which of these trust signals are “reliable signals” in the sense that they do not just imply trustworthiness (and may be faked), but actually prove trustworthiness. I have suggested Signalling Theory as a means to evaluate the reliability of signals that eHealth companies make use of as well as the reaction of users to these signals.

In order to develop a holistic understanding of the topic, I have included a number of additional factors in my analysis. Both the literature and my exploratory study have suggested that there is an important link between trust and risk perception, which has been studied extensively through the confirmatory study of this thesis. Further, as pointed out in the introduction, previous studies have focussed predominantly on the United States of America. Since the German healthcare system is set up quite differently, one aim of this study was to develop a better understanding of specificities of the German healthcare and eHealth sector.

Lastly, I have included an analysis of the “how” of the development of trust. How do users decide whether or not a website is trustworthy? Is it a rational or an intuitive decision? All of these aspects support a complex understanding of trust as an evolving relationship that depends not just the service offer, but on conscious signalling choices by the provider as well as cultural and personal predispositions of the user.

All of the above considerations led me to the following research questions:

*1) Does risk perception vary amongst different eHealth services and if yes, is there a direct correlation between risk perception and trust?*

*2) Which aspects of people's trust perception may be influenced by culture? Specifically, how does the trust-related reasoning of German study participants differ from existing findings in the field of eHealth related HCI?*

*3) Which are the most influential trustee-specific trust antecedents with regards to eHealth services?*

*4) What does the application of signalling theory as an analytical framework tell us about the reliability of various eHealth-related trust signals?*

*5) How do users evaluate trustworthiness? Is it a rational decision or an intuitive decision?*

These questions were incorporated in the study design of the qualitative and quantitative studies and served as a guiding system to the overall research design. The discussion chapter will answer the research questions individually. I will draw a connection between the qualitative and quantitative studies, interpret the results, and explain inconsistencies between study findings and the literature.

## **The Relation between Risk Perception and Trust**

As already mentioned in the literature review, trust and risk-taking are inherently linked. Mayer, Davis, & Schoorman (1995) for example have argued that trust is the willingness to be vulnerable and risk-taking behaviour is the behavioural outcome of underlying trust. When we can be sure about an outcome, we do not need to trust. This view is also confirmed by Lewis and Weigert (1985). They state that “trust begins where prediction ends” (p. 976). The aim of this dissertation is to understand specifically trust in the eHealth domain, which lead me to the following question:



*1) Does risk perception vary amongst different eHealth services and if yes, is there a direct correlation between risk perception and trust?*

I would first like to discuss whether risk perception varies amongst different eHealth services. RH1 of the quantitative study showed that participants perceived the medical encyclopaedia as less risky than the medical travel portal and the online pharmacy. The difference in perceived risk between online pharmacy and medical travel portal was not statistically significant. In conclusion, it is safe to say that risk perception does differ amongst different services, but there are also services that resemble each other enough to be perceived as similarly risky.

### **Risk Factors**

A closely related question is what are the factors that impact on risk perception. First and foremost, I would like to refer to a statement by (O'Neill, 2002a), who expressed the concern that the main challenge in our day and age is not to gain information but to tell right information from wrong information. The root cause of the issue being that trusters often cannot assess the quality of information and the credibility of its source. This issue concerns the majority of information that we can find online, including health advice.

Further, according to Lee and Turban (2001), financial loss and privacy loss are considerable risk factors in the online world. Comegys and colleagues (2009) add that also performance risk, delivery risks, and social risks play a role. With regards to the eHealth services studied in this thesis, it can be said that all of them carried the risk of unreliable information. Since no personal or financial data had to be submitted on the medical encyclopaedias, the other types of risk largely do not apply to them.

Both in the case of the online pharmacy and the medical travel portal, users have to provide health data, financial data, and personal data and they receive a treatment – either from a doctor abroad or in the shape of medication. What is more, both of them carry a certain social risk, a type of risk that has been highlighted by Baier (1986). According to her, social risk is often neglected in the study of risk perception, but for any individual human being, any form of self-disclosure creates a certain level of vulnerability – and vulnerability requires trust. That means that providing (health) data online is not just linked to potential data loss, but also to the inhibition threshold of self-disclosure. What is more, handing one's intimate and

private data over to someone else also creates a power-distance between the user and the service provider, where the power-imbalance may be perceived as an additional risk. Since patients had to complete questionnaires about their health both on the online pharmacy website and on the medical travel portal website, they do have this type of social risk in common.

In sum, the type of risk related to the online pharmacy and the travel portal might have been too similar to lead to a measurable effect in risk perception. The results indicate, however, that the usage of the term eHealth to summarise medical encyclopaedias, online pharmacies, and medical travel can lead to imprecision in study results, in particular related to trust and risk. There was a clear difference in risk perception between online encyclopaedias and the other services, Meta studies, particularly, need to take this factor into consideration. Otherwise researchers may end up comparing apples to oranges.

### **Risk-Trust Correlation**

Now I would like to turn to the second part of the question. The short answer to the question whether there is a correlation between risk perception and trust is “yes”. The quantitative data showed that there is a linear correlation between risk and trust (RH2). The correlation is negative, which means the higher the perceived risk, the lower was people’s trust in the service. Considering the phrasing of the question, this result is perfectly logical. The trust scale comprised statements such as “This website is trustworthy”, whereas the risk scale consisted of statements such as “It would be very risky to take a medical decision based on this website.”. That means high risk services received less trust than low risk service providers. If the relationship between risk and trust is approached from a more conceptual level, the logic would be reversed. If a service is very risky, I need to place more trust in the service provider than if a service is of low risk. This conceptual paradox could not be captured in the design of the quantitative study.

I would like to add another point that highlights the importance of the service offer and the related risk. RH3 of the quantitative study showed that there was no measurable effect of the presence of trust signals on the trust rating of the particular website. What is more, RQ1 showed that in the majority of cases, the trust rating that people gave a service after only reading its description of it was not significantly different from the rating they gave the website after seeing screenshots of it. That means that participants either display a high

degree of cognitive inertia, or the service offer (as found in the textual description in T1 of the experiment) and its related risk are the single most decisive factor when it comes to determining how much to trust a service provider.

### **Role of Distrust**

One aspect that is important to point out with regards to trust and eHealth is that more trust is not necessarily “better”. Lewis and Weigert (1985) have written about the functional aspects of distrust. Although trust is necessary to enable agency relationships and keep the economy function, distrust can be healthy to prevent betrayal and improve safety of the individual. It may also activate certain institutional safeguards that then in turn increase regulation and potentially system trust. In the case of eHealth that would mean that users’ expressed distrust may make the government reconsider regulation. On the individual level, distrust may make users fact check information on various websites, which then leads to a decrease in actual risk, which is beneficial for the user. This was certainly the case in the contextual inquiry, where several participants went into a state of distrust and then made the effort to collect additional information on the service provider.

### **Implications of Study Design**

Lastly, I would like to elaborate on the study design and its implications on risk perception. In many ways the study design resembles the design of a prisoner’s dilemma. Participants were asked to judge the trustworthiness of an anonymous third-party that they were given a limited amount of information about. They were also asked whether they would cooperate with this third-party (transaction intention). This study design has been criticised because it does not mirror real world trust situations that are usually gradual and reciprocal (Beatty, Reay, Dick, & Miller, 2011). This has also been emphasised by Baier (1986), who argues that in most social interactions, trust relationships start gradually, inexplicitly, and voluntarily. In the case of trust in eHealth services, the prisoners’-dilemma-like setup is surprisingly accurate. Since most eHealth offers are generally new, users cannot base their decision on a much existing information. The decision whether or not to book a medical travel offer is indeed non-gradual and unidirectional. Therefore, the study design mimics the real-world scenario very well. The main difference is that participants did not actually take a risk, they only reasoned whether they would take the risk in real life.

## **Distinct Aspects of eHealth in Germany**

In this section, I would like to discuss any observations that appear specific to German people. Previous findings are mixed. On the one hand, researchers such as Hofstede and Minkov (2010) have shown that culture informs our values and behaviours in almost every aspect of life. The logical conclusion would be that culture impacts on our judgements of online services. Jarvenpaa and colleagues (2006) could not confirm this assumption in a cross-cultural that they conducted. Therefore, I included following question:

*2) Which aspects of people's trust perception may be influenced by culture? Specifically, how does the trust-related reasoning of German study participants differ from existing findings of Anglo-Saxon researchers?*

This dissertation is not explicitly focussed on comparing different cultures and I did not set up a concrete comparison between two or more countries. There are, however, several findings that are a relevant contribution to this question. The quantitative study did not yield any insights with regard to impacts of the German culture or healthcare system on trust. In the two qualitative studies, on the other hand, participants mentioned how German history and the structure of the healthcare system shape people's reasoning with regard to trust in eHealth.

### **German Health Insurance System**

A major theme that arose in many instances throughout the study is the German health insurance system. As already mentioned in the chapter on results of the qualitative studies, the vast majority of German citizens is a member of a statutory health insurance. This system dates back to 1883 ("Krankenversicherung in Deutschland," 2018). How does this influence trust in relation to eHealth? Firstly, the contextual inquiries have shown that participants place a lot of trust in their health insurance. This can be illustrated by one participant who found an eHealth service through the website of her insurance. She explicitly said she does not find the eHealth service trustworthy in terms of its design and service offer. But she said she would still try the service because she trusts that her insurance would only recommend services that have been checked thoroughly. Despite the relatively small sample, several participants argued in a very similar way and used their insurance either as a reference point

for a highly trustworthy institution or actively searched for eHealth service recommendations on the insurance website.

But there is a second implication of the German insurance system on participants' trust in eHealth. Since medical services are paid directly by the insurance, patients are not educated about the costs related to healthcare. Participants of the study were repeatedly surprised about the prices of the offered eHealth services and argued that it makes more sense for them to visit a real doctor because that is free of charge for them. This dynamic was also confirmed by the expert interviews. From the given information it is difficult to conclude whether participants were put off by the cost of eHealth because the prices made the service provider seem less trustworthy, or simply because participants were not willing to spend money on healthcare in general. A sure result is that there is a very low willingness amongst participants to pay for eHealth services out of their personal pocket.

### **“Made in Germany” - Structural Assurance**

Another point that is worthwhile mentioning is that of structural assurance. Structural assurance stands for a functioning legal system and social control mechanisms (Hardin, 1996). There have been many instances throughout the contextual inquiries where participants referred to aspects of structural assurance that are to some extent linked to institutional factors specific to Germany. That reaches from references to collaborations of the eHealth provider with German universities, to involvement of German health insurances, and even just a physical address in Germany. In all cases, participants evaluated these references as positive trust indicators. This may have to do with a general positive association with the idea of “Made in Germany”, which historically has been an indicator of high quality, also in other industries. That means that overall, the trust in German institutions of my participants was quite high. This may be different in other countries and certainly indicates a direction for further research.

### **Cultural Impact on Data Protection Preferences**

Lastly, participants of the expert interviews stated that German users are more concerned about data protection than citizens of most other countries and refuse to entrust data to the hands of eHealth providers. One expert explained for example that German users reacted with one-star ratings on the app store when the providers started to require the name and the

age of the users as a condition for usage. One expert hypothesised that German's are more sensitive to this topic because of Germany's history of Stasi:

**Example 74:** I think that there are countries where people trust much more easily. Where you... When I see apps in Germany, you often hear the term "control". "I am being controlled". That is the same in East and West Germany. "I am being controlled and I don't want that." In other countries that do not have the same historical background that Germany unfortunately has, people deal very differently with data and personal things. (Participant E10, National Culture)

The contextual inquires only partly confirmed this finding. Whilst some participants provided their personal data without hesitation, others even became angry when they were asked to provide personal data. In conclusion, the study has shown that at least some German people are very uncomfortable about providing personal data. A more representative statement can only be drawn from a quantitative analysis.

## **Trustee-specific Trust Antecedents**

The core topic of this dissertation is how users decide whether to trust eHealth providers. Trustee-specific antecedents are of greater interest than truster-specific antecedents because I approach the topic from the angle of signalling theory, which means I am interested in the dynamics between trustee and truster. Truster-specific antecedents such as age, internet-experience, and trust propensity are relatively constant and do not change depending on the particular interaction with a trustee. The corresponding research question is:

*3) Which are the most influential trustee-specific trust antecedents with regard to eHealth services?*

The results of the quantitative and the qualitative studies are pointing in different directions. Therefore, I will discuss the results individually and suggest how this paradox can be explained. I would like to start with the quantitative study. As mentioned previously, RH3 showed that there is no statistically significant effect of the presence of trust signals on participants' trust in the service providers. That means the version of a website that contained for example trust seals, hotline, and user reviews received essentially the same trust rating

as a version of the same website that does not contain these features. What is more, the trust signals neither had an observable effect on how participants rated Technical Adequacy, Appearance, Perceived Impartiality, Financial Risk, and Safeguards and Trust Seals. The only exception is the LR condition in which there was a significant effect for Impartiality and Safeguards and Trust Seals.

At the same time, I found a high correlation between trust ratings and perceived quality of design (which was calculated as the mean of Technical Adequacy, Appearance, Perceived Impartiality, Financial Risk, and Safeguards and Trust Seals). A possible reason why there was an effect in the LR condition, but not in the other conditions may be that this was the condition in which the visual change between the condition with trust signal and without was the largest. I removed a large advertisement which created a rather drastical change in the overall design. Therefore, a possible explanation is that overall appearance matters, whereas individual trust signals are easily overlooked. Another possible explanation for the effect is an aversion of commerciality in relation to healthcare. Essentially, the quantitative study leads to the question: Do trust signals matter at all?

With regard to the qualitative study, the situation is different. Since participants of the contextual inquiries were asked to report their thoughts about the website and its trustworthiness, their attention was to some extent manipulated by the study design. During the study, participants essentially constantly commented on different website features they observed. Whilst the quantitative analysis left us with the question whether trust signals matter at all, the contextual inquiries answer the question “when participants do pay attention, what are the trust signals that are most significant?”.

In the analysis of the contextual inquiries, I introduced different search and decision-making strategies of participants. I explained that in the majority of cases, participants browsed through the website while solving the task (collection approach) and made their decision about trustworthiness dependent on their overall impression (accumulative approach). A theme that appeared to be of high importance to participants' evaluation is whether the design is “fitting” the service. One of the most common concerns of participants was that a certain website feature was not “fitting”. This comment is domain independent, it appeared in connection to colours, text, and social media usage, among others. “Fitting” referred to the right level of professionalism, expertise, seriousness, as well as user-friendliness. Social

psychologists use the term “situational normality” to describe this phenomenon. It refers to whether the environment seems in proper order (D. McKnight, 2002). Applied to eHealth websites, situational normality means that no observable feature undermines the image of a reputable medical service. Therefore, particularly in the case of low-risk websites, individual trust features did not play a crucial role. As long as the website maintained a high degree of situational normality, participants did not take major decisions based on individual features. That does not mean that trust features went unnoticed. It means participants drew their conclusion based on situational normality, not on the existence of individual trust signals. Only outstandingly negative features had a direct impact on decision-making. This was described as the deal-breaker approach to decision-making in the analysis chapter.

In contrast to low-risk websites and websites with a high level of situational normality, individual trust features did play an important role when considering high-risk websites. A high-risk service offer made the participants more alert because of their initial doubt in the service. In these cases, participants actively looked for indicators for trustworthiness (concrete search). Therefore, individual trust signals were of greater significance.

Now that it is clearer in which instances trust signals are of importance, I would like to come back to the question of “which trust signals are the most significant?”. I have used Wang and Emurian's (2005) framework of trust evoking design features in order to structure my analysis. As already explained in the analysis, I could confirm that each of the categories that Wang and Emurian proposed in their framework were used by my participants to reason about trust. So, at first sight one may think that an extremely large variety of signals is important for building and maintaining trust. This is not the case. Firstly, it is important to note that whilst signals from each category were mentioned, not all of these signals are of same importance or even had any crucial role in terms of final decision-making. What is more, it is sensible to find a way to conceptualise and weigh the impact of different features. In the previous paragraph, I have already introduced the idea of situational normality as an overarching theme. In that concept, any signal supports trust as long as it fits the expected image of the company. That means that it is not an individual signal that matters, but the coherence of many signals including design, content, and social cues.

A similar, yet different concept related to trust evoking features is that of “transfer of trust”. Transfer of trust is essentially a heuristic technique. It is undeniable that participants of my



study and users in general do not have a vast knowledge about eHealth, simply because it is new and market penetration is still low. What is meant by transfer of trust is that a participant uses a trust signal that he knows from a different domain and applies it to eHealth. These are examples for what is meant by transfer of trust:

**Example 75:** And sure, Diabetes Ratgeber. It may be from a real pharmacy or not, but the logo is there. And that surely creates trust. (Participant SS, Logo)

**Example 76:** They have two seals here called Pharmachecker and Trustpilot. That's good. I don't know them or what kind of quality seals it's related to, I would need to look it up. But the fact that they have seals creates some... (...) If it was a quality seal I knew and that was a scam, I would see it differently. But those two I don't know. So, I will trust it for now. (Participant LG, Seals of Quality)

**Example 77:** I think it's ok. Because I would think the information won't be much different from the package insert. And I trust in the package insert, too, after all. (Participant NR, Transfer of Trust)

There are several noteworthy characteristics related to transfer of trust. Even where participants explicitly said that they do not know the signal, but only something vaguely related to it, they still applied transfer of trust as a mental shortcut. What is more, transfer of trust happened in different ways. On the one hand, participants transferred trust from a reliable signal such as official seals to seals they had never seen before. On the other hand, they transferred trust from one entity such as the package insert directly to the eHealth company (in this case the content of the website). In conclusion, the concept of transfer of trust as well as the concept of situational normality help us understand how and why people rely on certain signals.

The next aspect I would like to touch on is the thematic network of integrity, benevolence, and competence. The most striking finding is that only very few participants made any references to benevolence. The only two points that were mentioned with regards to benevolence are financial aspects and callousness. Financial aspects were mentioned because some participants were put off by required payments and had expected more generosity. Callousness refers to participants' worry that companies may take advantage of

people's fear of disease. In sum, participants did not interpret any aspect of the websites as a positive indicator for benevolence. This also poses the question whether eHealth and e-commerce in general lead to a decline in benevolence. One may expect a greater deal of benevolence from a local pharmacist than from an online pharmacy, simply because of the sympathy that can develop from face-to-face interactions.

Integrity and competence played a larger role. Signals that were used to determine a service provider's competence were mainly related to quality of the content and usability, as well as external reference points such as awards and affiliations with known institutions. Integrity, on the other hand, was highly related to the service offer itself and whether it is in line with known protocols and legislation. Another signal that was used to draw conclusions about integrity is transparency. Even though participants were generally not willing to pay for eHealth services, they highlighted repeatedly that they value price transparency.

In conclusion, it is not possible to pinpoint one or several concrete trust signals that users use in order to determine the trustworthiness of an eHealth service. The quantitative study suggests that the main decision is already made as a result of the type of service offer and single trust signals do not impact significantly on users' judgement. The qualitative studies examined the role of individual trust features in greater detail. It became clear that trust signals are rarely perceived as standalone features, but in a complex context of different decision-making strategies. Depending on the decision-making strategy, signals become more or less impactful. Therefore, it can be said that users place much emphasis on the service offer and their initial judgement. Individual trust signals gain significance when risk is high or situational normality is interrupted.

## **eHealth through the Lens of Signalling Theory**

As discussed in the literature review, signalling theory provides a novel angle to the topic of trust related to eHealth. Whereas existing articles focussed on users' reactions to eHealth websites, signalling theory provides a framework in which trust signals evolve from the dynamics between service providers (trustees) and users (trusters). This approach acknowledges that service providers are actors with own intentions and reasoning processes and, hence, treats trust related to eHealth as a multidimensional system. Instead of looking at trust signals as stagnant features, signalling theory helps us understand whether or not

particular signals are reliable or not and how trustees adapt the signals they are sending in order to maximise their benefit. This is captured in the following research question:

*4) What does the application of signalling theory as an analytical framework tell us about the reliability of various eHealth-related trust signals?*

There are two terms that are of key significance: signal honesty and signal reliability. The key idea behind signalling theory is that both the truster and the trustee aim to maximise their own benefit. This applies to the animal kingdom, where signalling theory originally stems from, as well as game theory and eHealth. The truster benefits most from collaborating with a high-quality trustee and benefits less from collaborating with a low-quality trustee. Since the low-quality trustee benefits from collaborating with the truster, the low-quality trustee mimics the signals that the high-quality trustee uses. The term signal honesty stands for a signal that actually represents a true quality. That means a dishonest signal is a signal that a low-quality trustee uses to deceive the truster (Bacharach & Gambetta, 2003). Signal reliability, on the other hand, explains whether a signal is easily interpreted for what it is. This implies that an honest signal can be an unreliable signal if the truster fails to interpret it correctly (Waciewicz & Zywicki, 2012).

Applied to eHealth that means that a user (the truster) benefits from using a reliable, high-quality medical service. The eHealth provider (the trustee) benefits from users because they either receive payments for the service or they benefit from high traffic on the website because this leads to increased advertising income. The user does not benefit from bad service or incorrect medical information, but the provider of low-quality services still benefits from acquiring users. Therefore, low-quality service providers mimic high-quality service providers. So, the question is essentially if there are any reliable signals in the sense that only high-quality eHealth providers (can) use them.

To shed light on this question, I would like to refer to the three most important types of signals: costly signals, conventional signals, and indices. Indices describe a type of signal that carries a meaning by its pure existence, such as smoke is an index for fire (Eco, 1979). Costly signals refer to signals that require an upfront investment by the trustee. Thirdly, conventional signals come at little or no cost for the sender and are not inherently related to the message. They lead to an equilibrium because of penalties that may occur at a later stage

for faking the signal (Maynard Smith & Harper, 1995). In the following paragraphs, I will draw a connection amongst these different signals and the results of the qualitative and quantitative studies.

Firstly, it is important to notice that there is a major difference between face-to-face communication and a website as a medium for service provider and user to communicate. Face-to-face communication relies to a large extent on nonvocal nonverbal paralinguistic adaptors (NNPAs). These signals are commonly known as “body language” (Waciewicz & Zywczyński, 2012). NNPAs can be interpreted as indices because they are inherently linked to certain meanings. Blushing is for example an index for embarrassment. NNPAs are completely absent in the communication between eHealth providers and users, which shows how removed this type of communication is from evolutionary developed face-to-face communication. Secondly, verbal vocal communication does not lead to any cost to the sender. It reaches a signalling equilibrium through deterrents because telling lies bears the risk of social cost, such as being expelled from a community (Scott-Phillips, 2008). In other words, face-to-face communication mainly relies on indices and conventional signals. EHealth websites differ because in contrast to spoken word and body language, websites require a financial investment. That means costly signals are more probable in the case of eHealth websites.

### **Indices**

Overall, indices may be the most reliable signal, but they are also the rarest signal of trust in eHealth. One clear index is usability, which has also been suggested by Corritore and colleagues (2012). Participants easily determined the level of usability of a page and usability is inherently linked to high-quality UX design. The drawback, however, is that usability does not allow participants to draw conclusions about the quality of the medical service / advice that they can receive on the website in question. That means high usability is a reliable signal with regard to the website infrastructure and potentially the IT expertise of the provider, but it is an unreliable signal when it comes to quality of content. This is problematic because as mentioned in the previous section, participants frequently applied transfer of trust between logically unrelated aspects of the service.

Another index is the quality and completeness of the content of eHealth websites, which has also been pointed out by Dutta-Bergman (2004) as well as Harris (2011). Especially users

with a certain degree of previous knowledge may be able to recognise high quality content such as texts and videos. They can conclude from the high quality of the content that the service provider is trustworthy. One problem in relation to this has been pointed out by O'Neill (2002a). I have elaborated on her point in more depth in the section on Risk Perception, but in short, the main issue that she points out is the difficulty to actually determine whether a given piece of information is of high quality or not. This is to a large extent due to the fact that we may not be able to prove the credibility of the source.

However, useful and high-quality content often leads to increased usage of the website. This in turn increases the search engine ranking of the website. Both participants of the contextual inquiries and experts agreed that users use search engine results as a major guide for decision-making. Hence, a high search engine ranking is a common trust signal. If we can believe search engine providers that their algorithm correctly captures popularity of a website, the search engine ranking would be a reliable signal for high quality eHealth services. One limitation to this conclusion is that in certain cases, incorrect or lay content may be more popular than complex high-quality medical content. In these cases, it is plausible that the lower quality content scores higher on the search engine ranking than the high-quality content and the reliability of the index is reduced.

The last index I would like to elaborate on are user reviews. In a perfect world, a high-quality service would lead to satisfied users and these happy users would write positive reviews. A low-quality service would receive negative reviews from unsatisfied customers. If this was the case, user reviews would be an index for service quality. Some study participants searched for reviews to gain clarity. Other participants were more critical and explained that they believe that reviews come from paid actors. The following quote from one of the expert interviews reinforces the idea that user reviews may not be reliable:

**Example 78:** I'm not sure if there is anything that is 100% reliable. It all started in the travel industry. Yes, with Tripadvisor, exactly, where people noticed: "Ok, those are all fake reviews". So, in the travel sector this is common sense by now. Nobody reads all those reviews and comments about hotels because everyone knows that the hotel wrote these things themselves. That's how it all started. (Participant E5, Faked Reviews)

That means that user reviews have the potential to be a reliable index. But due to the nature of review systems that are easy to fake, the significance of user reviews is greatly reduced. In conclusion, none of the discussed indices is a fully reliable signal for trustworthy eHealth services. The quality of content is reliable to a certain extent, but an uneducated user may not be able to recognise high-quality content in the first place.

### **Costly Signals**

Costly signals in relation to online services have already been discussed in the literature. Mavlanova and colleagues (2012) have generated a list of costly online signals. Among several other signals it contains third-party seals, live chats, store locators, order tracking, and domain-specific content. However, they failed to discuss the reliability of these signals.

Third-party seals have been discussed both by participants of the contextual inquiry and by experts. Participants did rely on third-party seals for decision-making, but in several cases, they openly admitted that they do not know the seal. Essentially, they were trusting blindly in the seal. This was confirmed by experts that said that it is not unusual that companies design fake seals. Several experts mentioned, however, that the label “recognised medical product” (RMP) requires an immense investment of time and effort from the company and that it signifies high quality and reliability of the service. This means RMP is an honest signal. The problem is that due to users’ ignorance with regard to seals, going through the costly processes of acquiring the RMP seal does not pay off for the eHealth companies. So, an honest and potentially reliable signal entirely loses its significance. The logical equilibrium is a low uptake of RMP seals, unless users start to differentiate amongst fake seals and real seals.

Another costly signal is the collaboration with renowned doctors. It is a costly signal because on the one hand, it requires more time and effort to establish collaborations with high-profile doctors than with low-profile doctors. On the other hand, renowned doctors most probably receive a higher payment than low-profile doctors. Participants mentioned that they like when the involved doctors are displayed on the website because then their credentials can be verified elsewhere. Experts doubted, however, that users are able to judge the level of expertise of involved doctors. Furthermore, it is questionable whether doctors that are displayed on eHealth websites actually carry out any of the offered services. Offline it is apparent which doctor examines the patient, online anyone could work on the electronic

files. This is an important loophole that makes the involvement of expert doctors non-transparent and, therefore, reduces the reliability of the signal.

### **Conventional Signals**

Conventional signals are not costly for the sender, but when deception is discovered, the sender pays a penalty of some form (Maynard Smith & Harper, 1995). Conventional signals are closely related to what Hardin (1996) calls social controls. Small-scale controls are for example long-term relationships of families and friends or even business relationships. Large-scale social controls would be laws and similar institutional control mechanisms. Several control mechanisms such as institutionalized religious controls and broad social norms can be seen as “mixed social devices”.

Social-controls in the eHealth domain are mainly of importance when it comes to building a base of long-term customers. If a service provider does not fulfil the user’s expectations, he risks that this user never returns. Particularly if the business model is focussed on recurring transactions, this is a deterrent that can prevent service providers from deception. If the service is a one-off service, the threshold to deceive is lower. In that case, negative user reviews can act as a deterrent. In the contextual inquiries it was mentioned by one participant that he only reads the negative reviews of services. Therefore, negative user reviews do serve as deterrents to some extent. This is counter-balanced by the possibility that service providers fake positive reviews or write negative reviews for competitors.

The most obvious large-scale controls are related to the legal framework such as financial penalties or other sanctions. EHealth companies, just like any other company, face such penalties with regard to breaking contracts or fraud. When it comes to service quality, however, there are grey areas. Whilst traditional medical industries such as the pharmaceutical industry are heavily regulated, the same does not hold true for eHealth companies. Based on the expert interviews, providing medical information on the internet or providing medical travel does not automatically make a service provider accountable for the accuracy of information in the same way as a provider of actual medical services is held accountable. As mentioned previously, in order to acquire the label “recognised medical product”, a company needs to fulfil many criteria and there is a penalty if they do not fulfil the criteria. If a company decides not to acquire that label, there are less penalties. One decisive criterion is apparently whether a company only provides medical insights or

whether they provide a diagnosis or even a treatment. As long as they provide only insights, the legal grey area persists. That means there is a lack of penalties for eHealth services that do not classify as medical product such as fitness apps, hearing test apps, and all other purely informative services. This implies that there are few deterrents that keep service providers from sending fake signals.

### **Effective but Unreliable Signals**

Lastly, I would like to address a crucial finding with regards to signal reliability. As also Riegelsberger and colleagues (2003) as well as Lu and colleagues (2016) have pointed out, social presence is a major factor that builds trust between user and service. Social presence refers to three sub-categories: social presence of web (including sense of human contact, personalness, sociability, human warmth, and human sensitivity), social presence of others (including the sense that many other buyers feel interested and many other buyers are sharing information) and social presence of interaction (including being able to make sense of the attitude of the seller and imagining what the seller looks like). My studies, especially the contextual inquiries, confirmed exactly that. In many instances participants were drawing conclusions about trustworthiness based on Social Cue Design (which I devoted an entire organising theme to). That means that participants were inferring trustworthiness based on photos and videos for example. This set of signals (and especially the category “social presence of web”) can be labelled as “unreliable signals” because it is neither an index, nor does it lead to any cost for the trustee in case (s)he faked the signal.

### **Rational and Intuitive Decision-Making related to eHealth**

As I have explained in the literature review, there are two fundamentally different approaches to decision-making: rational decision-making and intuitive decision-making. This concept has been known to social scientists for many years and received popular attention through the publication of Kahnemann's (2011) book “Thinking, Fast and Slow” in which he introduces system 1 and system 2 thinking. System 1 stands for automatic, emotional, and unconscious decision-making, whereas system 2 stands for slow, calculating, and conscious decision-making. Intuitive and rational decision-making are so to say the result of system 1 and system 2 thinking.



System 1 thinking or intuitive decision-making is largely based on Kahneman and Tversky's concept of heuristics and biases (Tversky & Kahneman, 1974). Whenever people must make quick decisions that are not entirely based on rational reasoning, they make use of mental shortcuts. Examples of these shortcuts would be prejudices, stereotypes, priming, and affections.

Intuitive and rational decision-making are important concepts related to trust in eHealth because they provide a useful approach to understanding how people decide whether an eHealth provider is trustworthy. The corresponding research question is:

*5) How do users evaluate trustworthiness? Is it a rational decision or an intuitive one?*

### **Search Strategies and Decision-making Strategies**

In the previous sections, I have already partly answered this question. I have introduced different search strategies that participants employed (collection approach and concrete search) as well as decision-making strategies (accumulative approach and deal-breaker approach). I have argued that participants rely on situational normality and transfer trust from other domains to the eHealth domain. These observations can be linked directly to intuitive and rational decision-making.

The collection approach stands for a search strategy in which participants browsed the website without a clear agenda while the active search strategy stands for a more determined approach in which participants had certain features in mind that they were looking for on the website. It can be concluded that the collection approach matches the criteria for system 1 thinking or intuitive decision-making and the active search approach matches system 2 thinking. The decision-making categorisation that I proposed earlier (accumulative approach versus deal-breaker approach) does not allow for a clear conclusion regarding intuitive versus rational decision-making. In particular the deal-breaker approach can be based on a rationally sound argument or on a mental shortcut. Situational normality and transfer of trust are both part of intuitive decision-making because they represent the mental shortcuts that are part and parcel of system 1 thinking.

Overall, participants applied the accumulative approach much more frequently than the concrete search approach, which means that this study supports the hypothesis that system

I thinking is the more prevalent approach when it comes to decision-making related to trust in eHealth. This is also in line with finds by Roghanizad and Neufeld (2015). They essentially studied decision-making in relation to predictable risk and unpredictable risk, where predictable risk stands for risk situations in which a clear probability of the outcomes can be determined. An example for a predictable risk would be certain types of gambling, where the likelihood of outcomes can be calculated. Most social situations bear unpredictable risk that cannot be determined mathematically. This is also the case with regards to eHealth. The result of the mentioned study by Roghanizad and Neufeld (2015) was that people tend to rely on affective or intuitive decision-making rather than rational decision-making when faced with an unpredictable risk situation. My studies suggest that their findings do apply to eHealth, too.

### **System Trust and Interpersonal Trust**

There are, however, several points that I would like to elaborate on to give the reader a clearer understanding of what intuitive and rational decision look like in the domain of eHealth. Firstly, I would like to re-introduce the concept of system trust and interpersonal trust that I have mentioned in the literature review ( see for example Lewis & Weigert, 1985; Luhmann, 1979). Interpersonal trust is primarily based on the emotional bond between people. It prevents defection and increases trustworthiness because people want to avoid the emotional pain related to breaches of trust as well as a loss of reputation. System trust, on the other hand, relies on the functioning of bureaucratic sanctions, such as the legal system.

Although there may be exceptions, interpersonal trust is generally based on intuitive decision-making because it is hardly ever possible to take a fully rational decision about another human being. Human behaviour is not fully predictable, so we need mental shortcuts such as prejudices, stereotypes, and affection. System trust, on the other hand, is more reliant on rational reasoning. Its main strength are precise and logical regulations and contracts that prevent deception.

Now, the setup of the eHealth services that were used in this dissertation suggests that users need to rely on system trust. None of the services involved interactions with a doctor or other member of staff – at least not at the stage that participants were exposed to. Contact to a doctor was a paid option in some cases. This implies that there was de facto no interaction with a person and participants were essentially dealing with an unknown company. Still,

participants often relied on interpersonal trust rather than system trust. Small details such as coming from the same German region as the doctor on the website was enough to create a substantial amount of interpersonal trust.

Another related reasoning approach was to apply in-group / out-group thinking, which refer to people's tendency to interpret characteristics and actions of in-group members more favourably than that of out-group members (Tajfel, 1974). This finding has also been confirmed by Foddy and colleagues (2009) who have shown experimentally that people are more likely to trust in people who hold the same group membership. According to them, sharing a salient social category represents a sufficient clue for perceived "group membership". A participant was for example entirely put off from a website because it contained a photo of golf playing men, who she clearly perceived as members of a "different group". She concluded that the service was not for people like her. The last point related to interpersonal trust is a quote from one of the expert interviews:

**Example 79:** They know it goes to a doctor (the medical file). And they know someone here checks it and it is not done by a machine. People don't WANT that – that a machine does it. They know that there are real people behind it. (Participant E11, Involvement of Real Doctor)

In summary, this indicates that people are so accustomed to interpersonal trust and the types of reasoning related to it that they will rely on interpersonal trust even in cases that are far-fetched, from an objective standpoint. It does not mean that there was a complete absence of system trust. System trust and rational reasoning played a role in participants' decision-making as well. It rather means that people are so accustomed to developing interpersonal trust that they will apply the same reasoning methods to scenarios where this is inappropriate. As Kahnemann (2011) already argued in his book, system 2 thinking requires additional mental effort and people have a clear tendency to avoid this mental effort.

### **Cognitive Inertia**

What should also be mentioned in the context of intuitive versus rational decision-making is the aspect of cognitive inertia. A vast amount of research has shown that people are willing to stick to their first impression because it reduces the mental effort of re-evaluation (Good, 2000). Cognitive inertia is not what first comes to mind when one hears the term "intuitive

decision-making” but looking at it from the perspective of Kahneman’s System 1 and System 2 Thinking, it is clear that cognitive inertia falls under System 1 Thinking. Another way of conceptualising the same effect is by labelling it “anchoring and adjustment bias” (Baddeley, 2011). This essentially refers to the initial judgement as anchor, which serves as a baseline which will be slightly adjusted according to new information. Due to the “anchor”, new information usually does not lead to a major re-evaluation.

In the context of the present dissertation, a very striking finding is that participants rarely adjusted their trust rating of eHealth website over time, especially in the case of the quantitative study. This is especially interesting given the fact that the first trust rating was based on written information about the service, whereas only in the second trust rating participants were basing their judgement in the actual website. This leads to the conclusion that cognitive inertia is likely to play a large role in trust judgements over a period of time. This is of special importance in the light of the overarching theme of this dissertation that considers the “evolution of trust relationships over time”. If we can assume there is a high degree of cognitive inertia, eHealth providers need to make a substantial signalling effort to change users’ initial judgements.

### **Personal Differences**

Lastly, I would like to refer the notion of trust as a personality feature, which has been proposed by Rotter (1967). The focus on this study did not lie on truster-specific trust antecedents, yet it is worthwhile highlighting some findings in relation to this. As mentioned previously, the majority of participants of the contextual inquiries made their trust judgements predominantly based on situational normality (system 1 thinking), whereas a smaller number of participants straightaway looked for specific trust indicators (system 2 thinking).

Since the external circumstances were largely the same, this leads me to the conclusion that the participants’ personality and experiences play a role in their decision-making style. This assumption is also supported by the findings of the quantitative study, which suggests that general trust propensity is positively linked to trust judgements of specific website. Further, the quantitative study also suggests that web experience increases users’ caution with regards to online trust. This finding contradicts findings of Corbitt and colleagues (2003) who found that users with more internet experience were more likely to trust in e-commerce. Overall,

we can in any case conclude that users' predispositions play a non-negligible role in their trust-related reasoning.

## **Conclusion**

To conclude this chapter, I would like to refer back to the key questions that have guided the development of this research project. The main criticism regarding previous research was a lack of understanding of the factors that impact on users' evaluation of a service's trustworthiness. I highlighted in particular that the eHealth website can be seen as an interface between human beings – the users on one side, the designers and developers on the other side. Therefore, all the artefacts that we find on websites (anything from its design and functionality to media references and partnerships) are essentially potential “signals” for trustworthiness. My findings point out, on the one hand, which of these signals has the largest effects on users. My findings also give an indication for the reliability of the trust signals in the sense of the ease of faking the trust signal. What is more, I have also pointed out that the trust signalling is taking place in relation to a variety of other factors, These include the predisposition of the truster, the cultural setting (in this case Germany), as well as the risk of the service offer. In fact, one of the most important findings of this thesis is that risk perception has a major impact on the perceived trustworthiness. All in all, the results of both the qualitative and the quantitative study have been successful at extending the previous understanding of trust in relation to eHealth, especially with regards to the complex interrelation of various factors.

# Conclusion

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As I have pointed out in the introduction, eHealth has the potential to revolutionise the healthcare industry. By increasing patients' medical literacy, it provides a means to transition from paternalistic role allocations between doctors and patients. Furthermore, patients have increasingly more access to their own medical data and apps to help them make sense of this data. These ideas have already been mentioned in the existing literature: Chiou and Chung (2012) for example put forward the hypothesis that more information can enable patients to better manage their own health and to differentiate between symptoms, which then, in turn, enables them to give their doctor hints toward the right diagnosis. Ahern and colleagues (2006) even speak of patients' opportunity to become an equal member of their care team. In addition to the change in the doctor-patient relationship, research suggests that patients who have a better understanding of their illness and treatment plan worry less and recover more easily than those who are less informed (Fallowfield, 2008).

For this to happen, users need to trust in eHealth services. As studies on trust in the specific context of eHealth are scarce, the aim of this dissertation was to develop a thorough understanding of how trust evolves in the context of eHealth. This was done through three studies: Firstly, I conducted a contextual inquiry that captured in-depth how participants search for information about eHealth websites, what features matter most, and how decisions are made. Secondly, I interviewed experts who are involved in the creation and marketing of eHealth services. Lastly, the research hypotheses were validated through an online experiment.

The contributions of this particular study setup differ from existing studies mainly in terms of the perspective that I took. Whilst HCI studies in the eHealth domain have so far mostly focussed on the user only; this dissertation provides a multi-dimensional perspective on trust in eHealth including the view of eHealth providers. This multi-dimensional perspective was further developed by interpreting the study results through the lens of signalling theory. What is more, the relationship between risk and trustworthiness was examined, which led me to the conclusion that the risk perception of the overall service offer can determine the level of trust in a service even before entering the website. This allows the conclusion that

high-risk services should not be treated the same as low-risk services, although these have so far been all studied under the umbrella of eHealth. My own understanding after researching this topic in-depth is that this can lead to misinterpretations of results and wrong conclusions. In the following sections, I would like to present the key contributions of this dissertation in further detail.

## **Contributions to the Academic Field**

This dissertation does not fully fit into any one academic field. It draws from social psychology as well as from sociology, evolutionary biology, and information systems. The main strength of the dissertation is that it applies a theory-driven research approach to a practical problem. The result is deeper insights into people's reasoning about trust related to eHealth and practical recommendations to practitioners.

From a theoretical standpoint, the focus lay on signalling theory. The strength of this theory is that it sheds light on the motivations and reasoning processes of both the truster and the trustee. In the case of eHealth that means both the service provider and the user are studied. This framework is novel to the domain of eHealth-focussed Human-Computer Interaction (HCI) research which as the name of the field suggests, most researchers study how humans interact with computers. By approaching the research question through signalling theory, the computer has become a medium between two human entities. In a way, by choosing the signalling theory perspective, the website is a canvas that companies use to convey a message. The company is as much a research subject as the user. Why is there not more research that studies the motivations and reasoning of online service providers? From an IT perspective, it is reasonable to focus solely on the user because the main aim is to develop user-friendly software and hardware. From a social psychology perspective, the researcher is not simultaneously the creator of a product, but an observer. This perspective would not be complete if one did not study both the truster and the trustee. So, the contribution of this study to the HCI research field in general, and especially to the niche of HCI literature on eHealth, is a change in perspective that can help researchers to zoom out and see the larger picture in which technology emerges.

Whilst most studies at the intersection of HCI and eHealth have relied on quantitative studies, this study was heavily based on interviews. This allowed me not only to test hypotheses, but to make new observations. An unexpected outcome was that I discovered a pattern of *how* users reach their conclusion about trustworthiness. The pattern is conceptualised in the categorisation of search behaviour into the groups “collection approach” and “concrete search”. Decision-making was categorised as “accumulative approach” and “deal-breaker approach”. These categories can potentially help HCI researchers in domains other than eHealth to understand users’ decision-making behaviour.

What is more, this dissertation showed that users approach various service offers very differently. Depending on the level of risk involved, participants of the contextual inquiries took different search strategies. And in the quantitative study, users rated high-risk service offers as less trustworthy before they even saw what the website looks like. The literature treats eHealth services as one homogenous group. Whilst researchers describe the particular service offer that they study in their publications, there is little differentiation between different services. This poses an issue when different studies are summarised for meta-studies or when the findings of one study that looks specifically at medical forums is generalised to other eHealth domains. The contribution of this dissertation is that it contains clear evidence that online encyclopaedias need to be studied separately from medical travel and online pharmacies. Further research is needed to show which services can be reasonably categorised together.

## **Methodological Contributions**

I used a mixed-method approach in this dissertation. This led to two methodological contributions.

I was able to validate the framework by Wang and Emurian (2005) that captures design features that influence trust. So far, this framework has not been applied to eHealth. According to the researchers, trust is influenced by graphic design, social cue design, structure design, and content design. The contextual inquiries have shown that the included items are all relevant and all have been considered by participants when discussing trust. However, the framework has one pitfall though. It does not capture the full truth of how trust evolves in the sense that trust does not evolve in a vacuum. By giving your focus only to



design aspects, you create a tunnel vision that may be helpful to understand the impact of design features, but that can lead to a misinterpretation of effects when studies do not control for the other factors. The user does not only interact with software itself, but he is influenced by his own personality as well as the opinion of external parties. These aspects are missing in the framework and I have added them through additional thematic networks. The positive side of the framework by Wang and Emurian (2005) is that it provides more context on what ingredients make good design. However, to create a complete model that captures trust, personality-related aspects, as well as third-party aspects, need to be captured.

On the other hand, I developed an experimental design that captures reactions of users at different stages: at the information stage before seeing the website, after getting a first impression, and after a thorough examination of the website. Other classical user research methods do not capture how trust evolves while using the website. Approaches such as Google Analytics can capture how soon users leave, but they do not measure trust at different stages. Neither do heat maps, A/B testing, or contextual inquiries measure this succession of trust ratings. The same type of experiment can potentially be replicated with websites from different domains. The reason why this approach contributes additional insights to other approaches is that it enables the researcher to differentiate between participants' trust in the abstract idea of a service offer such as medical travel and trust in the concrete website.

## **Implications for Practitioners**

There are many different practitioners that are involved in eHealth services: doctors, clinics, startups, insurance companies, and many more. This chapter is solely focussed on the main providers of eHealth services: the companies that offer the service.

Firstly, I would like to elaborate on web design. It is probably impossible to give a universally valid definition of good design. This dissertation, however, found an important clue into what good design in the eHealth domain looks like. As mentioned previously, participants mentioned repeatedly whether a particular design feature is “fitting” or not. What is more, participants transferred trust from known and trusted entities to eHealth websites. Often these entities were service providers or even items from the offline world. On the other hand, features that do not resemble medical experiences decreased trust. These three examples demonstrate what is meant:

*Example 1: Medical information that is structured in the same way as the package insert of a prescription medicine led to increased trust.*

*Example 2: Usage of the pharmacy logo lead to higher trust although the eHealth provider is not a pharmacy.*

*Example 3: One of the medical second opinion websites used a photo of a living room, which led to decreased trust.*

For eHealth providers that means that in order to increase trust in their service they need to mimic the offline experience as much as possible. This relates to all aspects of the service. Logos, URLs, information structure, photos, and colours were all concerned. At the same time, this means that the design needs to be adjusted for each country. The pharmacy logo that was mentioned in example 2 is unique to Germany for instance. Also, the colours that people find appropriate may be dependent on the colours that are used by pharmacies, medicine packaging, and clinics in the respective country. In other words, practitioners are required to understand people's offline experience of using healthcare services in order to build an online representation that matches users' perception of a "fitting" service.

The next crucial point is the first experience of the service. The quantitative study has shown that participants rarely changed their mind about a service after the first impression. This behaviour is known as cognitive inertia. The term "first impression" does not relate to the first access of the website though. As I have shown in the quantitative study, participants formed their opinion purely based on a few key points of information about the service provider. This can be as little as a summary of the service offer. The service offer itself determines how risky the service seems and the risk level informs initial trust. Trust and risk have a negative linear correlation, which means the higher perceived risk, the lower is trust. That means that practitioners should first and foremost reduce unnecessary risks related to their service. Reducing the amount of data that users need to submit could be an important step to reduce the risk for example.

In addition, the qualitative studies have shown that users rely on information provided by external parties such as their acquaintances and media outlets. That means the first

impression can be formed long before the user accesses the website for the first time. Accordingly, practitioners need to provide a positive image throughout all touch points.

With regards to partner organisations and external certification, this dissertation has provided strong evidence that in the German market especially collaborations with insurance companies and accreditation through the independent consumer organisation Stiftung Warentest are worthwhile. Participants reacted very favourably to these signals. Also from the signalling theory perspective, collaborations with insurances and accreditation through Stiftung Warentest represent reliable signals.

Collaborations with insurances also make sense from the financial standpoint. Especially international eHealth service providers need to be aware that the willingness of German people to pay out of pocket is very low. Offering the service through an insurance company both increases trust and people's willingness to use the service.

## **Implications for Policy Makers**

The overall aim of this dissertation was not to develop policy recommendations, and neither did I conduct in-depth research on existing policies and regulations. Some research findings do, however, point towards certain changes that should be made to existing policies. These recommendations are heavily based on the expert interviews, which means further research to validate these gaps in the existing policy framework is needed.

First and foremost, the expert interviews clarified that the current system contains certain grey areas with regard to eHealth services. This concerns for example eHealth apps and websites that do not claim to provide a diagnosis or treatment. These apps may still provide critical medical information, but they do not fall under the same regulatory framework as a recognised medical product (RMP). In many cases, these websites and apps are not elaborate enough to fall under the category RMP. It is plausible to introduce a separate category for medical apps and websites that can potentially harm users with low-quality content or poor data security. The same regulatory body that regulates RMPs (in Germany it is called BfArM) could also regulate this smaller and less complex version of a medical product. This could be particularly useful with apps that collect sensitive health data such as menstrual period tracking apps or hearing test apps. As the expert interviews have shown, users can be

surprisingly naïve when submitting their data and some may even submit data when they do not trust the provider, out of pure convenience. That means an external control mechanism would save users from submitting data that may be used to their disadvantage if not treated with care.

The second point that I would like to make is related to the education of users. I have argued in the discussion that there is a signal equilibrium in relation to the usage of reliable third-party seals. Seals such as the RMP certification are costly for eHealth providers. At the same time, users do neither pay attention to these seals nor are they able to differentiate between relevant seals and irrelevant or even faked seals. That means it is unlikely that the cost and effort to acquire such a seal will lead to a significant benefit for the eHealth provider. A possible solution to this would be a large-scale campaign related to the dangers of using uncertified eHealth services as well as a branding and promotion campaign of the reliable seals.

## **Limitations and Recommendations for Future Research**

The first major limitation of this dissertation is that it solely focusses on the German market. There may be cultural differences in how users reason about eHealth services, so the results may not fully apply to other countries. Furthermore, references to insurance companies and specific media channels lose significance when transferred to other environments. The underlying logic may be the same, in the sense that users still transfer trust from a known and trusted entity to eHealth services. However, the entities would certainly be different entities from the reference points that German users used in the study. Culture may also influence the moral conceptions of users, that would have implications on the way they would reason differently about what constitutes the integrity of an eHealth provider.

Secondly, the vast majority of participants in this study had a high digital literacy. This was undeniably the case in the contextual inquiries and the recruitment strategy of the quantitative study automatically excluded people with low digital literacy: One group of participants were recruited through snowball sampling through my personal networks and the other group were users of an online panel company. In order to participate in an online panel service, a user needs at least a decent digital literacy. As one of my expert interview participants said, many eHealth services target elderly people that may not have a high digital

literacy. Studies that recruit actual users of these services as participants would be highly beneficial to gain a deeper understanding of real-world user problems related to eHealth; not only related to trust but also to usability.

Another limitation that needs to be mentioned is the paradox related to the results of the qualitative and quantitative studies. Whilst the qualitative studies suggested that a variety of trust signals impact on perceived trustworthiness, the quantitative study could not prove any impact of trust signals on trust. This paradox may be explained by assuming that participants only paid attention to trust signals because they were explicitly asked to report and justify their view on the trustworthiness of service providers. In the end, this paradox prevents me to draw any clear conclusion about the question of whether trust signals matter. Future research is certainly needed to bring clarity.

Lastly, I would like to refer to two aspects I have briefly mentioned in previous sections. On the one hand, future research needs to categorise different eHealth service, ideally according to their risk level. Summarising eHealth services that differ in their risk level in one study may lead to noise in the results of the study. On the other hand, signalling theory has proven to be a useful tool to shed light on trust dynamics between providers and users and researchers from other HCI domain can benefit from applying this theory to their research.



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# Appendix

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## Participants Contextual Inquiries

Nick-name	Age	Gender	Profession	City	Internet usage	Interview Location	Interview Date	Duration of audio file
P001	25	female	student	Berlin	daily	the participant's home	23.06.15	00:52:12
P002	26	female	doctor	Berlin	daily	the participant's home	23.06.15	00:57:29
P003	27	male	student	Berlin	daily	the participant's home	01.07.15	00:47:51
P004	31	female	consultant	Berlin	daily	the participant's home	09.07.15	00:56:32
P005	37	female	yoga teacher	Berlin	daily	the participant's home	09.07.15	00:52:50
P006	22	female	unemployed	Berlin	daily	the researcher's home	04.09.15	01:03:56
P007	51	female	cosmetician	Halver	daily	the participant's home	16.10.15	00:43:26
P008	54	female	commercial clerk	Halver	daily	the researcher's home	16.10.15	00:58:58
P009	54	female	pharmacy technician	Halver	daily	the participant's workplace	19.10.15	00:45:29
P010	71	male	retired	Halver	daily	the participant's home	19.10.15	01:04:28
P011	69	female	retired	Halver	weekly	the participant's home	20.10.15	01:01:28
P012	63	female	retired	Luedenscheid	daily	the participant's home	20.10.15	00:39:28
P013	73	male	retired	Luedenscheid	daily	the participant's home	20.10.15	00:37:58
P014	74	female	retired	Halver	daily	the participant's home	20.10.15	01:01:30
P015	48	female	pharmacy technician	Halver	daily	the participant's workplace	21.10.15	00:56:03
P016	62	male	tax accountant	Halver	daily	the participant's workplace	22.10.15	00:48:34
P017	25	male	student	Berlin	daily	the participant's home	27.10.15	00:49:10
P018	26	female	student	Berlin	daily	the participant's home	06.11.15	00:44:48

## Topic Guide Contextual Inquiries

### **Introduction**

- Explain purpose of the study: I'm interested in users' perceptions related to online medical services
- Let participant read information sheet
- Tell participant that (s)he can always withdraw from the study if (s)he feels uncomfortable
- Ask participant to sign consent form if (s)he agrees with conditions

### **Instructions for Think Aloud Protocol:**

You will now be shown around 4 different websites that provide medical information. Whilst you browse through the websites, try to say everything that goes through your mind. When the websites asks you to provide personal information, please type in the name and email address provided to you on your desk (e.g. Max Barkley, max.barkley@gmail.com), not your real name.

### **Interview**

#### *Thoughts about session*

- Would you use the website for personal use? Why? Why not?
- Would you recommend the website to a friend or relative? Why? Why not?
- Can you remember which of the websites offered to get in touch with a real doctor?
- When you were using the website, were you looking for any particular content?
- Which content of the website did you like? What did you not like?
- Was there any content that you did not understand?
- Were there any elements (e.g. certificates) that you were missing on the website?
- How trustworthy did you find the website?
- Which aspects of the website did you find trustworthy, which ones did you find less trustworthy?

#### *Previous experience of using medical websites*

- Have you previously used medical websites?
- If yes, what types of websites? (Prompts: informational, online consultation, online pharmacy)
- In which kind of situation did you use the website?
  - In case of emergency (e.g. to find closest hospital in the area)
  - For support with chronic condition (e.g. Diabetes management app)
  - To prepare myself before a consultation (e.g. looking up symptoms)
  - To look up terms after a medical consultation
  - For a second opinion before a treatment
  - To find like-minded people (e.g. online group)
- Can you remember the names of medical websites that you have used in the past?
- How did you decide which website to use?
- Did you find the websites that you have used trustworthy?
- If yes, do you remember what made them trustworthy?

*Demographics*

- Age? Degrees? Occupation?
- Frequency of Internet usage? Most frequently used device? (smartphone, laptop, desktop)

## Test Companies Contextual Inquiries

Name	Type	Interction with doctor	Payment required	Entry of medical data
Cardiogo	Cardiac Infarction App	yes	yes	yes
Dr Heart	Cardiology Portal	no	no	no
MySugr	Diabetes App	no	yes	yes
Medmedo	Medical Advice Service	yes	yes	yes
Frag-einen-Arzt	Medical Advice Service	yes	yes	yes
Onmeda	Medical Lexicon	no	no	no
Netdokter	Medical Lexicon	no	no	no
Frag-den-Professor	Medical Lexicon	no	no	no
Medexo	Medical Second Opinion	yes	yes	yes
Dr Spielberger	Medical Second Opinion	yes	yes	yes
Dr Piper	Medical Second Opinion	yes	yes	no
Medigo	Medical Travel	no	yes	yes
Dr Ed	Pharmacy and Advice Service	no	yes	yes
Dokter Online	Pharmacy and Advice Service	no	yes	yes
Ordermed	Prescription Delivery	no	no	yes
Tinnitracks	Tinnitus App	no	yes	yes
Patientus	Video Consultations	yes	no	yes



## Participants Expert Interviews

Alias	Alias Company	Age	Gender	Profession	City	Interview Location	Interview Date	Duration of audio file	Domain
E1	C1	28	female	Web designer	Berlin	the participant's office	05.03.15	00:58:00	Charity
E3	C3	30	female	Manager Communications & Marketing	Berlin / Munich	Skype	30.04.15	00:45:08	Medical Online Lexicon
E4	C4	31	female	UX designer	Berlin	the participant's office	30.04.15	00:56:23	Medical Travel
E7	C7	42	female	Founder	Berlin	the participant's office	28.08.15	00:47:03	Women's Health App
E2	C2	27	male	Web designer	Berlin	the participant's office	09.03.15	00:36:23	Start-up Incubator
E5	C5	28	male	Co-founder / Chief Commercial Officer	Berlin	the participant's office	04.06.15	00:39:41	Advertising
E6	C6	40	male	Head of Digital Marketing	Berlin	the participant's office	19.06.15	00:53:28	Pharmaceuticals
E8	C8	50	male	Managing Partner	Berlin	the participant's office	05.10.15	00:39:13	Digitisation Concepts
E9	C9	30	male	UX Designer	Berlin	the participant's office	01.12.15	00:53:38	Hearing Test App
E10	C10	46	male	CEO	Berlin	the participant's office	09.12.15	00:44:40	Diabetes Products
E11	C11	34	female	Head of Operations	Berlin	the participant's office	04.04.16	01:38:30	Medical Second Opinions

## Topic Guide Experts

### **Introduction**

- Explain project, give information about self
- Hand out information sheet and answer questions
- Let participant sign consent form

### **Warm-up questions**

- Age?
- Position in company?
- Years of experience in this field?

### **Their view on trust**

- General approach to design?
- Design principles?
- Own definition of trust (user / website)
- Difference between trust and usability?
- The role of trust for their business
- To what extent do they consider trustworthiness in their design ideas
- How do they explore whether or not the website seems trustworthy?
  - Usability studies?
  - Google analytics?
- Which are the main ways to win a user's trust?
- Is there a relationship between investment in design and trust?
- What impact does age have on willingness to trust?
- What impact does the type of service have?
  - E.g. healthcare versus e-commerce
- What impact does culture have?
  - German customers versus foreign customers

### **Structure design – usage and relative investment**

- Implementation of easy-to-use navigation (simplicity, consistency)
- Use of accessible information (no broken links and missing pictures)
- Use of navigation reinforcement (e.g. guides, tutorials, instructions)
- Application of page design techniques (e.g. white space and margin, strict grouping, visual density)

### **Social-cue design – usage and relative investment**

- Inclusion of representative photograph or video clip
- Use of synchronous communication media (e.g. instant messaging, chat lines, video calls)
- Use of virtual agents
- Affiliation with celebrities, domain experts or renown public figures
- “The Team” page

### **Content design – usage and relative investment**

- Brand-promoting information (e.g. prominent company logo or slogan, main selling point)
- Up-front disclosure of all aspects of the aspects of the customer relationship (e.g. company competence, security, privacy, financial, legal)
- Display of seals of approval or third-party certificate (trusted shops, internet privacy standards, TÜV, EHI, Bonicert)
- Use of comprehensive, correct, and current product or service information
- Use of relevant domain name
- Affiliation with well-known institutions or professional syndicates
- For German websites: use of “Impressum” page with full contact details)
- Mission statement
- Assumption of cost by medical insurer

### **Graphic design – usage and relative investment**

- Use of fitting colours
- Use of high-quality photos

### **Website external aspects**

- Use of social media
- Profiles on relevant portals
- Search engine optimisation
- Online marketing: which platforms?
- Google Adwords terms and slogans

### **Observed feedback**

- Direct feedback from users
- Web-analytics: is it being used? If yes, what are the main insights?
- Penalties for inappropriate usage of any feature?

## Invitations to Participate in Study

### Expert Interviews

Dear Ms / Mr XXX,

My name is Tanja Schomann, I am currently PhD student at Cambridge University. My PhD dissertation deals with users' perceptions of trustworthiness of medical websites. One part of the PhD are interviews with web designers, marketers and UX experts.

I'm still looking for more interview participants. (Add brief explanation how I found out about that person).

I hope you would be able to give me some insights on trust in the domain of eHealth.

Participation involves an interview of roughly 45 minutes. Participants will be asked about their experience and views with regard to features on websites that are increasing its trustworthiness. The interview will take place at a location of the participants convenience. In case we are not able to meet in person, we could also conduct the interview via Skype.

Would you be interested in participating? Let me know in case you would like more details on the study.

Thanks and best regards,  
Tanja Schomann

### Quantitative Study

Hi XXX,

I'm working on the last bits of my PhD and I need around 50 more participants for a study. Participation takes around 15 minutes and can be done on the browser of your laptop. It would be really nice of you could support me by taking part and / or by sharing the study with friends.

There is a lottery with 2x25 Euro Amazon vouchers for participants.

Many thanks,  
Tanja

[http://cambridge.eu.qualtrics.com//SE/?SID=SV\\_73ePLmdbContext21](http://cambridge.eu.qualtrics.com//SE/?SID=SV_73ePLmdbContext21)

# **Informed Consent Form – Contextual Inquiries**

## **Participant Information Sheet**

You are being invited to take part in a research study. Before deciding to participate it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information. Feel free to discuss issues with anyone, and if there is anything that is not clear or any questions you have, feel free to ask. Take your time reading, and don't feel rushed.

### **What is this research about?**

The aim of this study is to gain a better understanding of users' perceptions related to medical websites.

### **Who is doing this research?**

My name is Tanja Schomann, I'm a Ph.D. student in Psychology at Cambridge University. My contact details are: *tanja.schomann@icloud.com*, +491738525246. Dr David Good (Director of Education, Biological Science) is supervising my research project. His contact details are: *dg25@cam.ac.uk*

### **Why have you asked me to participate?**

You have been selected as a participant according to the following criteria: you are fluent in German, you are currently resident in Germany, you are between 18 – 75 years old, you do not have any neurological or psychiatric disorders, and you have faced a decision on a medical treatment in the past 5 years.

### **What will participation involve?**

Participation involves a think aloud protocol and a short interview. You will then be asked to have a look at a number of different medical websites and to report your thoughts and emotions related to the websites. After the think aloud protocol, I will ask you several questions about your experiences related to medical websites and your conclusions about the websites that you have used during the session.

### **How long will participation take?**

The session will take approximately one hour.

### **What about confidentiality?**

The whole session will be audio recorded. Participants will remain anonymous.

**If you are willing to participate, then please sign a Consent Form.  
You can keep this Information Sheet for your records.**

**Project:** Users' perceptions related to medical websites

**Researcher:** Tanja Schomann, Ph.D. student, Cambridge University  
Tanja.schomann@gmail.com

**Supervisor:** Dr David Good, dg25@cam.ac.uk

---

**To be completed by the Research Participant**

**Please answer each of the following questions:**

- |  |            |           |
|--|------------|-----------|
| Do you feel you have been given sufficient information about the research to enable you to decide whether or not to participate in the research?     | <b>Yes</b> | <b>No</b> |
| Have you had an opportunity to ask questions about the research?   | <b>Yes</b> | <b>No</b> |
| Do you understand that your participation is voluntary, and that you are free to withdraw at any time, without giving a reason, and without penalty? | <b>Yes</b> | <b>No</b> |
| Are you willing to take part in the research?  | <b>Yes</b> | <b>No</b> |
| Are you aware that the interview will be audio recorded?   | <b>Yes</b> | <b>No</b> |
| Will you allow the research team to use anonymised quotes in presentations and publications?   | <b>Yes</b> | <b>No</b> |
| Will you allow the anonymised data to be archived, to enable follow-up research, and training future researchers?                                    | <b>Yes</b> | <b>No</b> |

**Participants Name:** \_\_\_\_\_

**Participant's Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

If you would like a copy of the research report, please provide your email or postal address:

## **Informed Consent – Expert Interviews**

### **Participant Information Sheet**

You are being invited to take part in a research study. Before deciding to participate it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information. Feel free to discuss issues with anyone, and if there is anything that is not clear or any questions you have, feel free to ask. Take your time reading, and don't feel rushed.

#### **What is this research about?**

The aim of this study is to gain a better understanding of users' perceptions related to medical websites.

#### **Who is doing this research?**

My name is Tanja Schomann, I'm a Ph.D. student in Psychology at Cambridge University. My contact details are: *tanja.schomann@gmail.com*, 07925287005.

Dr David Good (Director of Education, Biological Science) is supervising my research project. His contact details are: *dg25@cam.ac.uk*. The study is financially supported by Newnham College and Medexo GmbH.

#### **Why have you asked me to participate?**

You have been selected as a participant according to the following criteria: you are above 18 years of age, you are working for a medical website, you have experience with the fields web design and / or customer satisfaction, you do not have any neurological or psychiatric disorders.

#### **What will participation involve?**

Participation involves a semi-structured interview. You will be asked about your experience with regards to evoking users' trust. What is more, we will discuss the costs related to different tools that you use on websites.

#### **How long will participation take?**

The session will take approximately 45 minutes.

#### **What about confidentiality?**

The whole session will be audio recorded. Participants will remain anonymous.

**If you are willing to participate, then please sign a Consent Form.  
You can keep this Information Sheet for your records.**

**Project:** Users' perceptions related to medical websites

**Researcher:** Tanja Schomann, Ph.D. student, Cambridge University  
Tanja.schomann@gmail.com

**Supervisor:** Dr David Good, dg25@cam.ac.uk

---

**To be completed by the Research Participant**

**Please answer each of the following questions:**

- |  |            |           |
|--|------------|-----------|
| Do you feel you have been given sufficient information about the research to enable you to decide whether or not to participate in the research?     | <b>Yes</b> | <b>No</b> |
| Have you had an opportunity to ask questions about the research?   | <b>Yes</b> | <b>No</b> |
| Do you understand that your participation is voluntary, and that you are free to withdraw at any time, without giving a reason, and without penalty? | <b>Yes</b> | <b>No</b> |
| Are you are willing to take part in the research?  | <b>Yes</b> | <b>No</b> |
| Are you aware that the interview will be audio recorded?   | <b>Yes</b> | <b>No</b> |
| Will you allow the research team to use anonymised quotes in presentations and publications?   | <b>Yes</b> | <b>No</b> |
| Will you allow the anonymised data to be archived, to enable follow-up research, and training future researchers?                                    | <b>Yes</b> | <b>No</b> |

**Participants Name:** \_\_\_\_\_

**Participant's Signature:** \_\_\_\_\_ **Date:** \_\_\_\_\_

If you would like a copy of the research report, please provide your email or postal address:



## Informed Consent Online Experiment

Please read the following text carefully before starting this study.

The aim of this study is to better understand the attitude of users towards medical offers online.

The companies that we present to you in this study should not be researched online (etc. via Google) because this would distort the results of the study.

No personal data will be collected throughout the study.

At the end of the study, you will be offered to take part in a lottery for 2 Amazon vouchers (value 25 Euro each). If you would like to take part, you need to submit your email address and your name. This data will be saved separately from your study results.

The participation in this study is voluntary and can be terminated at any point.

The study needs to be carried out on a laptop, not on a smartphone.

By clicking on “continue” you agree to participate in this study and you confirm your agreement with the above points.

The study is conducted by the Department of Psychology of Cambridge University. If you have any questions, please contact Tanja Schomann ([ts588@cam.ac.uk](mailto:ts588@cam.ac.uk)).

With best regards,  
Tanja Schomann  
PhD Candidate  
Department of Psychology  
Cambridge

## Trust Constructs

Construct level 1	Construct level 2	Question	Order	Scale
Perceived risk	Perceived risk	The usage of this website is very risky.	reverse	5-Likert
Perceived risk	Perceived risk	It would be very risky to take a medical decision based on this website.	reverse	5-Likert
Perceived risk	Perceived risk	My medical data are in safe hands with this provider	standard	5-Likert
Perceived risk	Perceived risk	I would provide my payment data without hesitation on this website.	standard	5-Likert
Personal relevancy	Familiarity with disease	I have suffered from the same symptoms covered in this scenario	-	binary
Personal relevancy	Familiarity with disease	My family members or friends have suffered the same symptoms covered in this scenario	-	binary
Personal relevancy	Familiarity with website	I have used the described website before.	-	binary
Situational involvement	Situational involvement	I can see how this service is relevant for patients.	standard	5-Likert
Transaction intention	Transaction intention	If I was in the described situation, I would use the service provider	standard	5-Likert
Trust	Ability	The service provider gives the impression that they have the ability to fulfill my needs.	standard	5-Likert
Trust	Ability	The service provider has sufficient experience to handle the work properly	standard	5-Likert
Trust	Benevolence	If I required help, this company would do its best to help me.	standard	5-Likert
Trust	Benevolence	The service provider gives the impression that they care for their users.	standard	5-Likert
Trust	Integrity	The service provider will keep its promises and commitments.	standard	5-Likert
Trust	Integrity	I would characterize the service provider as honest and sincere	standard	5-Likert
Trust	Trust general	This website is trustworthy	standard	5-Likert
Trust	Trust general	I find it necessary to be cautious with this website [reverse]	reverse	5-Likert

## Design Constructs

Construct	Statement	Order	Scale
Technical adequacy	The website looks easy to navigate through	standard	5-Likert
Technical adequacy	The website has adequate search facilities	standard	5-Likert
Appearance	The website uses colours properly	standard	5-Likert
Appearance	The website uses fonts properly	standard	5-Likert
Appearance	The website uses multimedia features properly	standard	5-Likert
Appearance	The website looks well organised	standard	5-Likert
Appearance	The website looks attractive	standard	5-Likert
Perceived impartiality	The advice seemed credible	standard	5-Likert
Perceived impartiality	The advice seemed manipulative	reverse	5-Likert
Perceived impartiality	The advice appeared to be impartial and independent	standard	5-Likert
Perceived impartiality	The website was free from advertisements	standard	5-Likert
Financial risk	I would be concerned that the price of this service may be too high.	reverse	5-Likert
Financial risk	I would be concerned that usage of this website might result in additional hidden cost.	reverse	5-Likert
Safeguards & Trust Seals	The website is affiliated with reputable doctors	standard	5-Likert
Safeguards & Trust Seals	The website has been reviewed by many users	standard	5-Likert
Safeguards & Trust Seals	The website is affiliated with known institutions	standard	5-Likert
Safeguards & Trust Seals	The website has been accredited by independent sources	standard	5-Likert

## Paranoia Construct

Questions	Scale	Order
Certain individuals have had it in for me	5-Likert	standard
I have definitely been persecuted	5-Likert	standard
People have intended me harm	5-Likert	standard
People wanted me to feel threatened, so they stared at me	5-Likert	standard
I was sure certain people did things in order to annoy me	5-Likert	standard
I was convinced there was a conspiracy against me	5-Likert	standard
I was sure someone wanted to hurt me	5-Likert	standard
I was distressed by people wanting to harm me in some way	5-Likert	standard
I was preoccupied with thoughts of people trying to upset me deliberately	5-Likert	standard
I couldn't stop thinking about people wanting to confuse me	5-Likert	standard
I was distressed by being persecuted	5-Likert	standard
I was annoyed because others wanted to deliberately upset me	5-Likert	standard
The thought that people were persecuting me played on my mind	5-Likert	standard
It was difficult to stop thinking about people wanting to make me feel bad	5-Likert	standard
People have been hostile towards me on purpose	5-Likert	standard
I was angry that someone wanted to hurt me	5-Likert	standard

## Trust Propensity Construct

Sub-Construct	Question	Order	Scale
Benevolence	In general, people really do care about the well-being of others.	standard	5-Likert
Benevolence	Most of the time, people care enough to try to be helpful, rather than just looking out for themselves.	standard	5-Likert
Benevolence	The typical person is sincerely concerned about the problems of others.	standard	5-Likert
Competence	I believe that most professional people do a very good job at their work.	standard	5-Likert
Competence	Most professionals are very knowledgeable in their chosen field.	standard	5-Likert
Competence	A large majority of professional people are competent in their area of expertise.	standard	5-Likert
General	My typical approach is to trust new acquaintances until they prove I should not trust them	standard	5-Likert
General	I usually trust people until they give me a reason not to trust them.	standard	5-Likert
General	I generally give people the benefit of the doubt when I first meet them.	standard	5-Likert
Integrity	Most people are honest in their dealings with others.	standard	5-Likert
Integrity	In general, most people keep their promises.	standard	5-Likert
Integrity	I think people generally try to back up their words with their actions.	standard	5-Likert

## Demographics and Web-experience

Question	Scale
How many times did you search information about restaurants or events?	(1=never, 2=1-3 times, 3=4-6 times, 4=7-10 times, 5=more than 10 times)
How many times did you book a bus or train ticket?	(1=never, 2=1-3 times, 3=4-6 times, 4=7-10 times, 5=more than 10 times)
How many times did you order sth online?	(1=never, 2=1-3 times, 3=4-6 times, 4=7-10 times, 5=more than 10 times)
How many times did you look for health-specific information?	(1=never, 2=1-3 times, 3=4-6 times, 4=7-10 times, 5=more than 10 times)
How old are you?	(1=18-24, 2=25-34, 3=35-44, 4=45-54, 5=55-64, 6=65-74, 7=over 75)
Gender?	(1=female, 2=male, 3=transgender)
Level of education	(1=no formal education, 2=Haupt/Realschule, 3=Abitur, 4=Berufsausbildung, 5=Bachelor, 6=Master, 7=Doktor)
Current profession	(1=employed, 2=self-employed, 3=jobsearch, 4=unemployed, not looking for job, 5=housewife, 6=student, 7=pensioner, 8=unable to work)

## R-Output Quantitative Study

**Research hypothesis 1: Users' risk perception of eHealth services depends on specific service offer.**

```
t.test(df$meanLR1.risk,df$meanMR1.risk)
```

Welch Two Sample t-test

```
data: df$meanLR1.risk and df$meanMR1.risk
t = -2.8191, df = 372.95, p-value = 0.005073
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.38948738 -0.06940607
sample estimates:
mean of x mean of y
 3.445946  3.675393
```

```
> t.test(df$meanLR1.risk,df$meanHR1.risk)
```

Welch Two Sample t-test

```
data: df$meanLR1.risk and df$meanHR1.risk
t = -2.7676, df = 376.61, p-value = 0.005925
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.3701861 -0.0626643
sample estimates:
mean of x mean of y
 3.445946  3.662371
```

```
> t.test(df$meanMR1.risk,df$meanHR1.risk)
```

Welch Two Sample t-test

```
data: df$meanMR1.risk and df$meanHR1.risk
t = 0.16062, df = 380.23, p-value = 0.8725
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
 -0.1463824  0.1724255
sample estimates:
mean of x mean of y
 3.675393  3.662371
```

**Research hypothesis 2: The higher users' risk perception, the lower initial trust in the service.**

```
cor.test(df$meanLR1.trust, df$meanLR1.risk)
```

Pearson's product-moment correlation

```
data: df$meanLR1.trust and df$meanLR1.risk
t = 12.35, df = 183, p-value < 2.2e-16
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 0.5870555 0.7459341
sample estimates:
      cor
0.6742218
```

```
cor.test(df$meanHR1.trust, df$meanHR1.risk)
```

Pearson's product-moment correlation

```
data: df$meanHR1.trust and df$meanHR1.risk
t = 13.557, df = 192, p-value < 2.2e-16
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 0.6194872 0.7648541
sample estimates:
      cor
0.6993313
```

```
cor.test(df$meanMR1.trust, df$meanMR1.risk)
```

Pearson's product-moment correlation

```
data: df$meanMR1.trust and df$meanMR1.risk
t = 13.77, df = 189, p-value < 2.2e-16
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 0.6288996 0.7720907
sample estimates:
      cor
0.7076889
```

**Research question 1: To what extent does the first impression of a website influence trust judgements?**

```
t.test(df$meanLRW1.trust,df$meanLRW2.trust, paired=T) #paired t-test.
```

Paired t-test

```
data: df$meanLRW1.trust and df$meanLRW2.trust
t = 1.1493, df = 89, p-value = 0.2535
```

alternative hypothesis: true difference in means is not equal to 0  
95 percent confidence interval:  
-0.02935897 0.10991453  
sample estimates:  
mean of the differences  
0.04027778

t.test(df\$meanLRO1.trust,df\$meanLRO2.trust, paired=T) #paired t-test.

Paired t-test

data: df\$meanLRO1.trust and df\$meanLRO2.trust  
t = 2.2463, df = 94, p-value = 0.02703  
alternative hypothesis: true difference in means is not equal to 0  
95 percent confidence interval:  
0.009927942 0.161124690  
sample estimates:  
mean of the differences  
0.08552632

t.test(df\$meanHRW1.trust,df\$meanHRW2.trust, paired=T) #paired t-test.

Paired t-test

data: df\$meanHRW1.trust and df\$meanHRW2.trust  
t = 2.5695, df = 93, p-value = 0.01177  
alternative hypothesis: true difference in means is not equal to 0  
95 percent confidence interval:  
0.02144881 0.16738098  
sample estimates:  
mean of the differences  
0.09441489

t.test(df\$meanHRO1.trust,df\$meanHRO2.trust, paired=T) #paired t-test.

Paired t-test

data: df\$meanHRO1.trust and df\$meanHRO2.trust  
t = 2.8733, df = 99, p-value = 0.004971  
alternative hypothesis: true difference in means is not equal to 0  
95 percent confidence interval:  
0.03210259 0.17539741  
sample estimates:  
mean of the differences  
0.10375

t.test(df\$meanMRW1.trust,df\$meanMRW2.trust, paired=T) #paired t-test.

Paired t-test



data: df\$meanMRW1.trust and df\$meanMRW2.trust  
 t = 0.54319, df = 98, p-value = 0.5882  
 alternative hypothesis: true difference in means is not equal to 0  
 95 percent confidence interval:  
 -0.06700315 0.11750820  
 sample estimates:  
 mean of the differences  
 0.02525253

t.test(df\$meanMRO1.trust,df\$meanMRO2.trust, paired=T) #paired t-test.

Paired t-test

data: df\$meanMRO1.trust and df\$meanMRO2.trust  
 t = 3.4333, df = 91, p-value = 0.0008994  
 alternative hypothesis: true difference in means is not equal to 0  
 95 percent confidence interval:  
 0.05038918 0.18874126  
 sample estimates:  
 mean of the differences  
 0.1195652

**Research hypothesis 3: Trust signals have an impact on trust.**

t.test(df\$meanLRW3.trust,df\$meanLRO3.trust,na.rm=T)

Welch Two Sample t-test

data: df\$meanLRW3.trust and df\$meanLRO3.trust  
 t = -0.52243, df = 182.99, p-value = 0.602  
 alternative hypothesis: true difference in means is not equal to 0  
 95 percent confidence interval:  
 -0.2912055 0.1692757  
 sample estimates:  
 mean of x mean of y  
 2.666667 2.727632

t.test(df\$meanHRW3.trust,df\$meanHRO3.trust,na.rm=T)

Welch Two Sample t-test

data: df\$meanHRW3.trust and df\$meanHRO3.trust  
 t = 0.77206, df = 183.89, p-value = 0.4411  
 alternative hypothesis: true difference in means is not equal to 0  
 95 percent confidence interval:  
 -0.1364318 0.3118573  
 sample estimates:  
 mean of x mean of y  
 2.920213 2.832500

```
t.test(df$meanMRW3.trust,df$meanMRO3.trust,na.rm=T)
```

#### Welch Two Sample t-test

```
data: df$meanMRW3.trust and df$meanMRO3.trust  
t = -1.0215, df = 188.54, p-value = 0.3083  
alternative hypothesis: true difference in means is not equal to 0  
95 percent confidence interval:  
-0.3754793 0.1192759  
sample estimates:  
mean of x mean of y  
2.755051 2.883152
```

#combined – I would advice against using it

```
t.test(df$meanLRO3.HRO3.MRO3.trust,df$meanMRO3.trust,na.rm=T)
```

#### Welch Two Sample t-test

```
data: df$meanLRO3.HRO3.MRO3.trust and df$meanMRO3.trust  
t = -0.64763, df = 164.83, p-value = 0.5181  
alternative hypothesis: true difference in means is not equal to 0  
95 percent confidence interval:  
-0.2617868 0.1324687  
sample estimates:  
mean of x mean of y  
2.818493 2.883152
```

### **Research question 2: How do trust and transaction intention correlate?**

```
cor.test(df$LR.transaction,df$LR.trust) # this one only shows correlation for LR
```

#### Pearson's product-moment correlation

```
data: df$LR.transaction and df$LR.trust  
t = 13.953, df = 183, p-value < 2.2e-16  
alternative hypothesis: true correlation is not equal to 0  
95 percent confidence interval:  
0.6399867 0.7813065  
sample estimates:  
cor  
0.7179655
```

```
cor.test(df$HR.transaction,df$HR.trust) # this one only shows correlation for HR
```

#### Pearson's product-moment correlation

```
data: df$HR.transaction and df$HR.trust
```

```
t = 15.522, df = 192, p-value < 2.2e-16
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 0.6761769 0.8025274
sample estimates:
      cor
0.7459913
```

```
cor.test(df$MR.transaction,df$MR.trust) # this one only shows correlation for MR
```

Pearson's product-moment correlation

```
data: df$MR.transaction and df$MR.trust
t = 17.452, df = 189, p-value < 2.2e-16
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 0.7243453 0.8344511
sample estimates:
      cor
0.7855383
```

**Research question 3: Which trust signal has the largest effect on trust? (Technical Adequacy, Appearance, Perceived Impartiality, Financial Risk, Safeguards & Trust Seals)**

```
t.test(df$LRW.adequacy, df$LRO.adequacy)
```

Welch Two Sample t-test

```
data: df$LRW.adequacy and df$LRO.adequacy
t = 0.090972, df = 179.65, p-value = 0.9276
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
-0.2359468 0.2587538
sample estimates:
mean of x mean of y
 1.916667 1.905263
```

```
> t.test(df$LRW.appearance, df$LRO.appearance)
```

Welch Two Sample t-test

```
data: df$LRW.appearance and df$LRO.appearance
t = -0.33579, df = 182.71, p-value = 0.7374
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
-0.2492955 0.1767809
sample estimates:
mean of x mean of y
```

2.031111 2.067368

```
> t.test(df$LRW.impartiality, df$LRO.impartiality)
```

Welch Two Sample t-test

data: df\$LRW.impartiality and df\$LRO.impartiality  
t = -2.9492, df = 182.25, p-value = 0.003604  
alternative hypothesis: true difference in means is not equal to 0  
95 percent confidence interval:  
-0.39578428 -0.07848473  
sample estimates:  
mean of x mean of y  
2.694444 2.931579

```
> t.test(df$LRW.risk.financial, df$LRO.risk.financial)
```

Welch Two Sample t-test

data: df\$LRW.risk.financial and df\$LRO.risk.financial  
t = 1.271, df = 182.99, p-value = 0.2053  
alternative hypothesis: true difference in means is not equal to 0  
95 percent confidence interval:  
-0.09997002 0.46195832  
sample estimates:  
mean of x mean of y  
3.038889 2.857895

```
> t.test(df$LRW.safeguards, df$LRO.safeguards)
```

Welch Two Sample t-test

data: df\$LRW.safeguards and df\$LRO.safeguards  
t = -2.0876, df = 182.3, p-value = 0.03822  
alternative hypothesis: true difference in means is not equal to 0  
95 percent confidence interval:  
-0.43992661 -0.01241257  
sample estimates:  
mean of x mean of y  
2.752778 2.978947

```
t.test(df$HRW.adequacy, df$HRO.adequacy)
```

Welch Two Sample t-test

data: df\$HRW.adequacy and df\$HRO.adequacy  
t = -0.056037, df = 185.98, p-value = 0.9554  
alternative hypothesis: true difference in means is not equal to 0  
95 percent confidence interval:

-0.2195424 0.2074147  
sample estimates:  
mean of x mean of y  
1.898936 1.905000

> t.test(df\$HRW.appearance, df\$HRO.appearance)

Welch Two Sample t-test

data: df\$HRW.appearance and df\$HRO.appearance  
t = -0.1292, df = 179.11, p-value = 0.8973  
alternative hypothesis: true difference in means is not equal to 0  
95 percent confidence interval:  
-0.2077464 0.1822145  
sample estimates:  
mean of x mean of y  
1.987234 2.000000

> t.test(df\$HRW.impartiality, df\$HRO.impartiality)

Welch Two Sample t-test

data: df\$HRW.impartiality and df\$HRO.impartiality  
t = 0.17389, df = 166.14, p-value = 0.8622  
alternative hypothesis: true difference in means is not equal to 0  
95 percent confidence interval:  
-0.1509069 0.1800558  
sample estimates:  
mean of x mean of y  
2.659574 2.645000

> t.test(df\$HRW.risk.financial, df\$HRO.risk.financial)

Welch Two Sample t-test

data: df\$HRW.risk.financial and df\$HRO.risk.financial  
t = -0.15842, df = 187.54, p-value = 0.8743  
alternative hypothesis: true difference in means is not equal to 0  
95 percent confidence interval:  
-0.2418614 0.2059039  
sample estimates:  
mean of x mean of y  
3.117021 3.135000

> t.test(df\$HRW.safeguards, df\$HRO.safeguards)

Welch Two Sample t-test

data: df\$HRW.safeguards and df\$HRO.safeguards  
t = -0.12743, df = 181.2, p-value = 0.8987

alternative hypothesis: true difference in means is not equal to 0  
95 percent confidence interval:  
-0.2367433 0.2080199  
sample estimates:  
mean of x mean of y  
2.885638 2.900000

t.test(df\$MRW.adequacy, df\$MRO.adequacy)

Welch Two Sample t-test

data: df\$MRW.adequacy and df\$MRO.adequacy  
t = 0.21311, df = 187.56, p-value = 0.8315  
alternative hypothesis: true difference in means is not equal to 0  
95 percent confidence interval:  
-0.1958158 0.2432466  
sample estimates:  
mean of x mean of y  
1.978261 1.954545

> t.test(df\$MRW.appearance, df\$MRO.appearance)

Welch Two Sample t-test

data: df\$MRW.appearance and df\$MRO.appearance  
t = -1.0057, df = 188.76, p-value = 0.3158  
alternative hypothesis: true difference in means is not equal to 0  
95 percent confidence interval:  
-0.28943889 0.09396239  
sample estimates:  
mean of x mean of y  
1.989130 2.086869

> t.test(df\$MRW.impartiality, df\$MRO.impartiality)

Welch Two Sample t-test

data: df\$MRW.impartiality and df\$MRO.impartiality  
t = 0.042423, df = 188.96, p-value = 0.9662  
alternative hypothesis: true difference in means is not equal to 0  
95 percent confidence interval:  
-0.1623514 0.1694880  
sample estimates:  
mean of x mean of y  
2.657609 2.654040

> t.test(df\$MRW.risk.financial, df\$MRO.risk.financial)

Welch Two Sample t-test

```
data: df$MRW.risk.financial and df$MRO.risk.financial
t = 0.0090349, df = 188.73, p-value = 0.9928
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
-0.2744105 0.2769357
sample estimates:
mean of x mean of y
3.375000 3.373737

> t.test(df$MRW.safeguards, df$MRO.safeguards)
```

#### Welch Two Sample t-test

```
data: df$MRW.safeguards and df$MRO.safeguards
t = 1.8163, df = 188.66, p-value = 0.07091
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
-0.01883984 0.45675157
sample estimates:
mean of x mean of y
2.953804 2.734848
```

```
#combined
```

#### Pearson's product-moment correlation

```
data: df$design and df$mean_trust
t = 17.583, df = 283, p-value < 2.2e-16
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
0.6619337 0.7737783
sample estimates:
cor
0.7225507
```

### **Research question 4: Does users' trust propensity impact on trust in eHealth services?**

```
cor.test(df$propensity,df$LR.trust, na.rm=T)
```

#### Pearson's product-moment correlation

```
data: df$propensity and df$LR.trust
t = 2.2167, df = 183, p-value = 0.02788
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
0.0178520 0.2989975
sample estimates:
cor
```

0.1617041

```
> cor.test(df$propensity,df$HR.trust, na.rm=T)
```

Pearson's product-moment correlation

```
data: df$propensity and df$HR.trust
t = 4.0151, df = 192, p-value = 8.516e-05
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 0.1430532 0.4033783
sample estimates:
      cor
0.2783191
```

```
> cor.test(df$propensity,df$MR.trust, na.rm=T)
```

Pearson's product-moment correlation

```
data: df$propensity and df$MR.trust
t = 5.366, df = 189, p-value = 2.339e-07
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
 0.2336860 0.4807621
sample estimates:
      cor
0.3636015
```

### **Research question 5: Does web experience impact on trust in eHealth services?**

```
cor.test(df$webexp.sum,df$LR.trust)
```

Pearson's product-moment correlation

```
data: df$webexp.sum and df$LR.trust
t = -1.7394, df = 183, p-value = 0.08364
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
-0.26689071 0.01704968
sample estimates:
      cor
-0.1275326
```

```
> cor.test(df$webexp.sum,df$MR.trust)
```

Pearson's product-moment correlation

```
data: df$webexp.sum and df$MR.trust
t = -3.101, df = 189, p-value = 0.002224
```



```
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
-0.3510470 -0.0805723
sample estimates:
cor
-0.2200345
```

```
> cor.test(df$webexp.sum,df$HR.trust)
```

Pearson's product-moment correlation

```
data: df$webexp.sum and df$HR.trust
t = -2.0854, df = 192, p-value = 0.03836
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
-0.283747901 -0.008117253
sample estimates:
cor
-0.1488219
```

```
> cor.test(df$webexp.sum,df$mean_trust)
```

Pearson's product-moment correlation

```
data: df$webexp.sum and df$mean_trust
t = -2.9976, df = 283, p-value = 0.002962
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
-0.2857898 -0.0604734
sample estimates:
cor
-0.1754279
```

### **Research question 6: Do socio-demographics impact on trust in eHealth services?**

```
t.test(df$LR.trust[df$gender_binary_femalevsotter==1],df$LR.trust[df$gender_binary_femalevsotter==0])
```

Welch Two Sample t-test

```
data: df$LR.trust[df$gender_binary_femalevsotter == 1] and
df$LR.trust[df$gender_binary_femalevsotter == 0]
t = 0.14861, df = 163.71, p-value = 0.882
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
-0.1931429 0.2245808
sample estimates:
mean of x mean of y
2.750801 2.735082
```

```
>
t.test(df$MR.trust[df$gender_binary_femalevsother==1],df$MR.trust[df$gender_binary_f
emalevsother==0])
```

#### Welch Two Sample t-test

```
data: df$MR.trust[df$gender_binary_femalevsother == 1] and
df$MR.trust[df$gender_binary_femalevsother == 0]
t = -1.3307, df = 164.26, p-value = 0.1851
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
-0.37080842 0.07222795
sample estimates:
mean of x mean of y
2.898058 3.047348
```

```
>
t.test(df$HR.trust[df$gender_binary_femalevsother==1],df$HR.trust[df$gender_binary_fe
malevsother==0])
```

#### Welch Two Sample t-test

```
data: df$HR.trust[df$gender_binary_femalevsother == 1] and
df$HR.trust[df$gender_binary_femalevsother == 0]
t = -0.7296, df = 172.43, p-value = 0.4666
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
-0.2817164 0.1296565
sample estimates:
mean of x mean of y
2.933333 3.009363
```

```
>
t.test(df$mean_trust[df$gender_binary_femalevsother==1],df$mean_trust[df$gender_binar
y_femalevsother==0])
```

#### Welch Two Sample t-test

```
data: df$mean_trust[df$gender_binary_femalevsother == 1] and
df$mean_trust[df$gender_binary_femalevsother == 0]
t = -0.92268, df = 244.63, p-value = 0.3571
alternative hypothesis: true difference in means is not equal to 0
95 percent confidence interval:
-0.23624867 0.08552068
sample estimates:
mean of x mean of y
2.860844 2.936208
```

```
#### employment
```

```
summary(employment) #show the summary table
      Df Sum Sq Mean Sq F value Pr(>F)
Q38      6  1.98  0.3295  0.658 0.684
Residuals 178 89.13  0.5007
101 observations deleted due to missingness
> print(model.tables(employment,"means"),digits=3) #report the means and the
number of subjects/cell
Tables of means
Grand mean
```

2.743919

```
Q38
  1  2  3  6  7  8  9
  2.69 2.63 2.86 2.44 2.91 2.8 2.65
rep 88.00 18.00 5.00 4.00 34.00 33.0 3.00
```

```
summary(employment) #show the summary table
      Df Sum Sq Mean Sq F value Pr(>F)
Q38      6  1.98  0.3295  0.658 0.684
Residuals 178 89.13  0.5007
101 observations deleted due to missingness
> print(model.tables(employment,"means"),digits=3) #report the means and the
number of subjects/cell
Tables of means
Grand mean
```

2.743919

```
Q38
  1  2  3  6  7  8  9
  2.69 2.63 2.86 2.44 2.91 2.8 2.65
rep 88.00 18.00 5.00 4.00 34.00 33.0 3.00
```

```
summary(employment) #show the summary table
      Df Sum Sq Mean Sq F value Pr(>F)
Q38      7  6.65  0.9494  1.936 0.0661 .
Residuals 186 91.22  0.4904
---
Signif. codes:  0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
92 observations deleted due to missingness
> print(model.tables(employment,"means"),digits=3) #report the means and the
number of subjects/cell
Tables of means
Grand mean
```

2.968213

Q38

	1	2	3	4	6	7	8	9
	2.86	2.99	2.62	1.83	3.38	3.26	3.1	2.89
rep	101.00	18.00	5.00	1.00	3.00	27.00	36.0	3.00

#education

edu<- aov(LR.trust~edu,data=df) #do the analysis of variance

> summary(edu) #show the summary table

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
edu	5	4.22	0.8442	1.739	0.128
Residuals	179	86.88	0.4854		

Residuals 179 86.88 0.4854

101 observations deleted due to missingness

> print(model.tables(edu,"means"),digits=3) #report the means and the number of subjects/cell

Tables of means

Grand mean

2.743919

edu

	2	3	4	5	6	7
	2.49	2.86	2.66	2.98	2.82	2.77
rep	30.00	36.00	58.00	21.00	38.00	2.00

edu<- aov(MR.trust~edu,data=df) #do the analysis of variance

> summary(edu) #show the summary table

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
edu	5	0.75	0.1501	0.255	0.937
Residuals	185	109.09	0.5897		

Residuals 185 109.09 0.5897

95 observations deleted due to missingness

> print(model.tables(edu,"means"),digits=3) #report the means and the number of subjects/cell

Tables of means

Grand mean

2.966841

edu

	2	3	4	5	6	7
	3	2.98	2.88	3.03	3.03	2.88
rep	39	32.00	60.00	21.00	35.00	4.00

edu<- aov(HR.trust~edu,data=df) #do the analysis of variance

> summary(edu) #show the summary table

	Df	Sum Sq	Mean Sq	F value	Pr(>F)
edu	5	8.08	1.6168	3.386	0.00595 **
Residuals	188	89.78	0.4775		

Residuals 188 89.78 0.4775

---

Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

```

92 observations deleted due to missingness
> print(model.tables(educ,"means"),digits=3) #report the means and the number of
subjects/cell
Tables of means
Grand mean

```

```
2.968213
```

```

educ
  2  3  4  5  6  7
  2.97 3.32 2.76 2.78 3.11 2.85
rep 33.00 30.00 56.00 24.00 45.00 6.00

```

```

TukeyHSD(educ, ordered=TRUE, conf.level=0.95)
Tukey multiple comparisons of means
 95% family-wise confidence level
factor levels have been ordered

```

```
Fit: aov(formula = HR.trust ~ educ, data = df)
```

```

$educ
      diff      lwr      upr    p adj
5-4 0.01785714 -0.4675963411 0.5033106 0.9999981
7-4 0.09598214 -0.7587469159 0.9507112 0.9995243
2-4 0.21151245 -0.2251504423 0.6481753 0.7302036
6-4 0.35292659 -0.0454214481 0.7512746 0.1149338
3-4 0.56264881  0.1124577687 1.0128399 0.0054051
7-5 0.07812500 -0.8300753071 0.9863253 0.9998714
2-5 0.19365530 -0.3401428910 0.7274535 0.9021422
6-5 0.33506944 -0.1678691118 0.8380080 0.3942571
3-5 0.54479167 -0.0001285176 1.0897119 0.0500925
2-7 0.11553030 -0.7675536062 0.9986142 0.9990005
6-7 0.25694444 -0.6078352212 1.1217241 0.9563709
3-7 0.46666667 -0.4231842680 1.3565176 0.6582763
6-2 0.14141414 -0.3146084284 0.5974367 0.9478322
3-2 0.35113636 -0.1508072588 0.8530800 0.3381651
3-6 0.20972222 -0.2592703997 0.6787148 0.7915474

```

for HR two averages are significantly different: education level 3 from education level 4, and education level 3 from education level 5

```
# age
```

```

age<- aov(LR.trust~age,data=df) #do the analysis of variance
> summary(age) #show the summary table
      Df Sum Sq Mean Sq F value Pr(>F)
age      6  3.05  0.5086  1.028 0.409
Residuals 178 88.05  0.4947
101 observations deleted due to missingness

```

```
> print(model.tables(age,"means"),digits=3) #report the means and the number of
subjects/cell
Tables of means
Grand mean
```

2.743919

```
age
  2  3  4  5  6  7  8
2.73 2.78 2.56 2.79 2.68 2.76 3.38
rep 38.00 34.00 25.00 33.00 21.00 29.00 5.00
```

```
age<- aov(MR.trust~age,data=df) #do the analysis of variance
There were 24 warnings (use warnings() to see them)
```

```
> summary(age) #show the summary table
```

```
      Df Sum Sq Mean Sq F value Pr(>F)
age      6  2.43  0.4058  0.695 0.654
Residuals 184 107.40  0.5837
```

95 observations deleted due to missingness

```
> print(model.tables(age,"means"),digits=3) #report the means and the number of
subjects/cell
Tables of means
Grand mean
```

2.966841

```
age
  2  3  4  5  6  7  8
2.93 2.92 2.87 3.19 3.04 2.87 2.89
rep 32.00 36.00 29.00 32.00 27.00 26.00 9.00
```

```
summary(age) #show the summary table
```

```
      Df Sum Sq Mean Sq F value Pr(>F)
age      6  2.37  0.3945  0.773 0.592
Residuals 187  95.50  0.5107
```

92 observations deleted due to missingness

```
> print(model.tables(age,"means"),digits=3) #report the means and the number of
subjects/cell
Tables of means
Grand mean
```

2.968213

```
age
  2  3  4  5  6  7  8
3.15 2.93 2.95 2.81 2.9 3.09 3
rep 30.00 38.00 36.00 35.00 22.0 27.00 6
```

## Research question 7: Does paranoia impact on trust in eHealth services?

```
cor.test(df$paranoia.mean,df$LR.trust, na.rm=T)
```

Pearson's product-moment correlation

```
data: df$paranoia.mean and df$LR.trust
t = 0.34197, df = 183, p-value = 0.7328
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
-0.1194331 0.1689237
sample estimates:
cor
0.02527092
```

```
> cor.test(df$paranoia.mean,df$HR.trust, na.rm=T)
```

Pearson's product-moment correlation

```
data: df$paranoia.mean and df$HR.trust
t = 1.1481, df = 192, p-value = 0.2524
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
-0.05898955 0.22087701
sample estimates:
cor
0.08257147
```

```
> cor.test(df$paranoia.mean,df$MR.trust, na.rm=T)
```

Pearson's product-moment correlation

```
data: df$paranoia.mean and df$MR.trust
t = 0.12127, df = 189, p-value = 0.9036
alternative hypothesis: true correlation is not equal to 0
95 percent confidence interval:
-0.1333253 0.1506118
sample estimates:
cor
0.008821065
```

10% of the most paranoid people are those that have a sum score on the paranoia scale 48 and lower.

The ttest between paranoid and non paranoid is non significant

```
t.test(df$LR.trust[df$paranoia.sum<=48],df$LR.trust[df$paranoia.sum>48])
```

Welch Two Sample t-test

```
data: df$LR.trust[df$paranoia.sum <= 48] and df$LR.trust[df$paranoia.sum > 48]
t = 0.16827, df = 24.582, p-value = 0.8678
```

alternative hypothesis: true difference in means is not equal to 0

95 percent confidence interval:

-0.3289794 0.3874627

sample estimates:

mean of x mean of y

2.769841 2.740600

```
> t.test(df$MR.trust[df$paranoia.sum<=48],df$MR.trust[df$paranoia.sum>48])
```

Welch Two Sample t-test

data: df\$MR.trust[df\$paranoia.sum <= 48] and df\$MR.trust[df\$paranoia.sum > 48]

t = 0.22498, df = 19.884, p-value = 0.8243

alternative hypothesis: true difference in means is not equal to 0

95 percent confidence interval:

-0.3875354 0.4811984

sample estimates:

mean of x mean of y

3.009259 2.962428

```
> t.test(df$HR.trust[df$paranoia.sum<=48],df$HR.trust[df$paranoia.sum>48])
```

Welch Two Sample t-test

data: df\$HR.trust[df\$paranoia.sum <= 48] and df\$HR.trust[df\$paranoia.sum > 48]

t = -1.1043, df = 33.24, p-value = 0.2774

alternative hypothesis: true difference in means is not equal to 0

95 percent confidence interval:

-0.4454485 0.1319573

sample estimates:

mean of x mean of y

2.831667 2.988412

### **Research question 8: Does personal relevancy impact on trust in eHealth services?**

```
t.test(df$LRW.trust[df$LRW.relevancy==6],df$LRW.trust[df$LRW.relevancy>0&df$LRW.relevancy<6])
```

Welch Two Sample t-test

data: df\$LRW.trust[df\$LRW.relevancy == 6] and df\$LRW.trust[df\$LRW.relevancy > 0 & df\$LRW.relevancy < 6]

t = 0.10284, df = 10.586, p-value = 0.92

alternative hypothesis: true difference in means is not equal to 0

95 percent confidence interval:

-0.7048504 0.7736004

sample estimates:

mean of x mean of y

2.692708 2.658333

```
t.test(df$LRO.trust[df$LRO.relevancy==6],df$LRO.trust[df$LRO.relevancy>0&df$LRO.relevancy<6])
```



Welch Two Sample t-test

data: df\$LRO.trust[df\$LRO.relevancy == 6] and df\$LRO.trust[df\$LRO.relevancy > 0 & df\$LRO.relevancy < 6]

t = 1.0251, df = 75.16, p-value = 0.3086

alternative hypothesis: true difference in means is not equal to 0

95 percent confidence interval:

-0.1359418 0.4241871

sample estimates:

mean of x mean of y

2.859848 2.715726

t.test(df\$HRW.trust[df\$HRW.relevancy==6],df\$HRW.trust[df\$HRW.relevancy>0&df\$HRW.relevancy<6])

Welch Two Sample t-test

data: df\$HRW.trust[df\$HRW.relevancy == 6] and df\$HRW.trust[df\$HRW.relevancy > 0 & df\$HRW.relevancy < 6]

t = 0.72176, df = 16.256, p-value = 0.4807

alternative hypothesis: true difference in means is not equal to 0

95 percent confidence interval:

-0.3554618 0.7231701

sample estimates:

mean of x mean of y

3.017187 2.833333

t.test(df\$HRO.trust[df\$HRO.relevancy==6],df\$HRO.trust[df\$HRO.relevancy>0&df\$HRO.relevancy<6])

Welch Two Sample t-test

data: df\$HRO.trust[df\$HRO.relevancy == 6] and df\$HRO.trust[df\$HRO.relevancy > 0 & df\$HRO.relevancy < 6]

t = 0.74187, df = 11.803, p-value = 0.4727

alternative hypothesis: true difference in means is not equal to 0

95 percent confidence interval:

-0.3492743 0.7089099

sample estimates:

mean of x mean of y

2.967697 2.787879

t.test(df\$MRW.trust[df\$MRW.relevancy==6],df\$MRW.trust[df\$MRW.relevancy>0&df\$MRW.relevancy<6])

Welch Two Sample t-test

data: df\$MRW.trust[df\$MRW.relevancy == 6] and df\$MRW.trust[df\$MRW.relevancy > 0 & df\$MRW.relevancy < 6]

t = 1.5367, df = 69.643, p-value = 0.1289  
alternative hypothesis: true difference in means is not equal to 0  
95 percent confidence interval:  
-0.07442712 0.57395274  
sample estimates:  
mean of x mean of y  
3.002451 2.752688

t.test(df\$MRO.trust[df\$MRO.relevancy==6],df\$MRO.trust[df\$MRO.relevancy>0&df\$MRO.relevancy<6])

#### Welch Two Sample t-test

data: df\$MRO.trust[df\$MRO.relevancy == 6] and df\$MRO.trust[df\$MRO.relevancy > 0 & df\$MRO.relevancy < 6]  
t = 0.56099, df = 19.419, p-value = 0.5812  
alternative hypothesis: true difference in means is not equal to 0  
95 percent confidence interval:  
-0.3126685 0.5421057  
sample estimates:  
mean of x mean of y

### **Research question 9: Does situational involvement impact on trust in eHealth services?**

cor.test(df\$LR.situation,df\$LR.trust) #

#### Pearson's product-moment correlation

data: df\$LR.situation and df\$LR.trust  
t = 18.699, df = 183, p-value < 2.2e-16  
alternative hypothesis: true correlation is not equal to 0  
95 percent confidence interval:  
0.7540893 0.8545905  
sample estimates:  
cor  
0.8102136

#### Pearson's product-moment correlation

data: df\$HR.situation and df\$HR.trust  
t = 17.101, df = 192, p-value < 2.2e-16  
alternative hypothesis: true correlation is not equal to 0  
95 percent confidence interval:  
0.7142568 0.8272802  
sample estimates:  
cor

0.7769539

cor.test(df\$MR.situation,df\$MR.trust) #

Pearson's product-moment correlation

data: df\$MR.situation and df\$MR.trust

t = 16.238, df = 189, p-value < 2.2e-16

alternative hypothesis: true correlation is not equal to 0

95 percent confidence interval:

0.6967125 0.8166823

sample estimates:


cor




0.7631973

# Screenshots LR Condition

The screenshot shows the Onmeda.de website interface. At the top, there are navigation links for 'Apotheken-Notdienst', 'Symptom-Check', 'Folgen', 'Spiele', and 'Login'. The main header features the Onmeda.de logo and a search bar with the placeholder 'Suchbegriff eingeben'. Below the header is a green navigation bar with categories: 'Krankheiten & Symptome', 'Medikamente', 'Schwangerschaft & Familie', 'Gesund leben', 'Magazin & Specials', 'Service & Selbsttests', and 'Foren'. The main content area displays an article titled 'Selbsttest Schilddrüsenunterfunktion' with a sub-header 'Haben Sie eine Schilddrüsenunterfunktion?'. The article includes an image of a doctor examining a patient's neck and a short introductory text. To the right of the article is an advertisement for 'Kaffee-Vollautomaten für Betrieb und Büro' and a 'Body-Mass-Index (BMI)-Rechner' widget. The BMI calculator has input fields for weight (kg), height (cm), and age (years), and a 'Zum Ergebnis' button. On the far right, there is a vertical banner with text about vacation stomach problems.



This screenshot is similar to the one above but with a different layout. The navigation bar is the same. The article 'Selbsttest Schilddrüsenunterfunktion' is still present. However, the 'Body-Mass-Index (BMI)-Rechner' widget is now positioned above the 'Specials' section. The 'Specials' section lists items like 'Magenprobleme im Urlaub', 'Reiseapotheke', 'Haarausfall bei Frauen', and 'Haarausfall bei Männern'. The right-side banner is also present.

Menu


 Folgen
  Spiele
  Login

### Verwandte Themen

- Schilddrüsenwerte
- Video: Schilddrüsenerkrankung
- Bildergalerie: Welche Symptome deuten auf eine Schilddrüsenunterfunktion hin?
- Schilddrüsenunterfunktion (Hypothyreose)

 Folgen Sie uns auf Facebook
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**Disclaimer:**

© 2016 [gofeminin.de GmbH](#) - Das Informationsangebot rund um die persönliche Gesundheit auf [www.onmeda.de](#) dient ausschließlich Ihrer Information und ersetzt in keinem Fall eine persönliche Beratung, Untersuchung oder Diagnose durch einen approbierten Arzt. Die auf Onmeda zur Verfügung gestellten Inhalte können und dürfen nicht zur Erstellung eigenständiger Diagnosen und/oder einer Eigenmedikation verwendet werden. Bitte beachten Sie auch den [Haftungsausschluss](#) sowie unsere Hinweise zu den [Bildrechten](#).

Über uns	Datenschutz	Jobs
Kontakt	Impressum	Werbung
Sitemap	Unternehmen	Content-Lizenzierung
Haftungsausschluss	Presse	Nutzungs-basierte Online-Werbung

### Apotheken-Notdienst


PLZ oder Ort eingeben und suchen:



#### Verggrößerte Prostata


Etwa jeder vierte Mann über 50 hat eine vergrößerte Prostata – und das bedeutet meist: Probleme beim Wasserlassen.




**Selbsttest**



#### Hauttypen-Test



Wer den eigenen Hauttyp kennt, kann seine Haut richtig pflegen!


Menu


 Folgen
  Spiele
  Login


### Verwandte Themen

- Schilddrüsenwerte
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- Schilddrüsenunterfunktion (Hypothyreose)

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 Folgen Sie uns auf Google+



Wir erfüllen die [afgis-Transparenzkriterien](#). Das [afgis-Logo](#) steht für hochwertige Gesundheitsinformationen.



Wir befolgen den [HONcode-Standard](#) für vertrauenswürdige Gesundheitsinformationen. [Kontrollieren Sie dies hier.](#)


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**Selbsttest**



#### Hauttypen-Test

Wer den eigenen Hauttyp kennt, kann seine Haut richtig pflegen!

Anzeige

Onmeda.de  Themenspecial: Magenprobleme im Urlaub sponsored by **iberogast**

Apotheken-Notdienst  Symptom-Check  Folgen  Spiele  Login

Onmeda.de  Für meine Gesundheit  

[Home](#) [Krankheiten & Symptome](#) [Medikamente](#) [Schwangerschaft & Familie](#) [Gesund leben](#) [Magazin & Specials](#) [Service & Selbsttests](#) [Foren](#)

Home > Interaktives, Bilder & ... > Selbsttests, Quiz & To... > Selbsttest Schilddrü...

**Selbsttest Schilddrüsenunterfunktion**

Seite 3 von 10

**Haben Sie aus unerklärlichen Gründen zugenommen?**

Ja  
 Nein

[Weiter](#)





Anzeige



 **LEFERY**

**Schock! Sie ist 72, sieht aber aus wie 35!**  
Ehemaliges Topmodel verrät ihr Geheimnis einer faltenlosen Haut und erstaut alle Dermatologen...  
[Weiterlesen](#)

**Body-Mass-Index (BMI)-Rechner**  
Zu dick, zu dünn oder gerade richtig?

Sie wollen Ihren Urlaub beschwerdefrei genießen? Wir verraten Ihnen, wie Magenprobleme vermeiden können [zum Themenspecial](#)

Apotheken-Notdienst  Symptom-Check  Folgen  Spiele  Login

Onmeda.de  Für meine Gesundheit  

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Seite 3 von 10

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Ja  
 Nein

[Weiter](#)

**Body-Mass-Index (BMI)-Rechner**  
Zu dick, zu dünn oder gerade richtig?





Gewicht:

Größe:



Alter:

[Zum Ergebnis](#)

**Specials**

- Magenprobleme im Urlaub 
- Reiseapotheke 
- Haarausfall bei Frauen 
- Haarausfall bei Männern 

**Verwandte Themen**

- Schilddrüsenwerte 
- Video: Schilddrüsenerkrankung 



# Screenshots MR Condition

MEDIGO

Unsere Services ▾ Deutsch - € ▾ Über ▾ [Angebot einholen](#)

Krebstherapie ▾ Kardiologie ▾ Orthopädie ▾ Zahnmedizin ▾ Ästhetische medizin ▾ Reproduktionsmedizin ▾ Weitere ▾

## Gesundheitsversorgung weltweit

- ✓ International zertifizierte Kliniken
- ✓ Behandlungen für jeden Geldbeutel
- ✓ Individuelle, persönliche Betreuung
- ✓ Absolut kostenfreie Beratung

[Video abspielen ▶](#)

Ich suche nach

In der Nähe von

Letzte Suche: Haarimplantat Procera® Vollkeramik-Kronen Narbenentfernung

## Finden Sie eine Klinik für beliebte medizinische Behandlungen

MEDIGO

Haben Sie Fragen?  
(+49) 30 568 373703

Unsere Services ▾ Deutsch - € ▾ Über ▾ [Angebot einholen](#)

Krebstherapie ▾ Kardiologie ▾ Orthopädie ▾ Zahnmedizin ▾ Ästhetische medizin ▾ Reproduktionsmedizin ▾ Weitere ▾

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MEHR ERFAHREN **Daily Mail** **CNN** **The Herald-Sun** **theguardian** PARTNER **Lufthansa**  
WorldCity Partner

## Finden Sie eine Klinik für beliebte medizinische Behandlungen

## Veneers Weltweit

✓ Wählen Sie aus 167 Kliniken und Krankenhäusern ✓ Preise vergleichen und Kostenvorschläge anfordern

Suche nach Prozedur z.B. Zah...

Alle Ziele

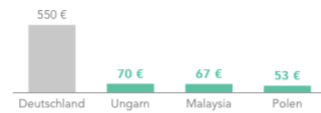
**Suche**

### SORTIERE KLINIKEN NACH LÄNDERN

- Alle Ziele**
- Belgien (3 Kliniken)
- Brasilien (4 Kliniken)
- Costa Rica (9 Kliniken)
- Deutschland (2 Kliniken)
- Frankreich (1 Kliniken)
- Großbritannien (7 Kliniken)
- Hongkong (3 Kliniken)
- Indien (5 Kliniken)
- Israel (2 Kliniken)
- Japan (2 Kliniken)

### Veneers kostengünstig im Ausland

Die 3 kostengünstigsten Optionen von insgesamt 17 Zielländern auf MEDIGO



### Veneers: Was beeinflusst die Endkosten?

- ▶ Marke
  - ▶ Verwendete Materialien
  - ▶ Andere Behandlungen, die in Verbindung durchgeführt werden
  - ▶ Anzahl der Zähne
- [Erfahre mehr über Veneers](#)

### Wählen Sie ein Reiseziel aus, um Ihre Suche zu verfeinern

<b>Deutschland</b> ab 850 €	<b>Schweiz</b> Preis auf Anfrage	<b>Thailand</b> ab 72 €
<b>Ungarn</b> ab 70 €	<b>Spanien</b> ab 140 €	<b>Polen</b> ab 54 €

[weitere Länder anzeigen](#)

167 Kliniken für Veneers

Bester Treffer

## Veneers Weltweit

✓ Wählen Sie aus 167 Kliniken und Krankenhäusern ✓ Preise vergleichen und Kostenvorschläge anfordern ✓ **Patientenbewertungen lesen**



Suche nach Prozedur z.B. Zah...

Alle Ziele

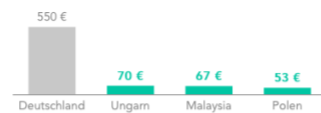
**Suche**

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[weitere Länder anzeigen](#)

167 Kliniken für Veneers

Bester Treffer



- Libanon (1 Kliniken)
- Malaysia (5 Kliniken)
- Marokko (1 Kliniken)
- Mexiko (22 Kliniken)
- Philippinen (2 Kliniken)
- Polen (14 Kliniken)
- Russische Föderation (3 Kliniken)
- Schweiz (1 Kliniken)
- Singapur (4 Kliniken)
- Spanien (14 Kliniken)
- Südafrika (2 Kliniken)
- Taiwan (3 Kliniken)
- Thailand (22 Kliniken)
- Tunesien (1 Kliniken)
- Türkei (3 Kliniken)
- Ungarn (14 Kliniken)
- Vereinigten Arabischen Emiraten (13 Kliniken)
- Ägypten (1 Kliniken)
- Österreich (1 Kliniken)

**SORTIERE KLINIKEN NACH ZAHNMEDIZIN BEHANDLUNGEN**

- Veneers (167)**
  - Keramik-Veneers
  - Komposit-Veneers
  - IPS e.max®-Veneers
  - Direkte Kompositveneers
  - IPS Empress Esthetics Veneers
  - Zirkonveneers
  - Snap on Smile
  - Lumineers®



**FOGÁSZ KFT**

Budapest , Ungarn

Die FOGÁSZ Kft Zahnarztpraxis wurde 1991 gegründet. Sowohl lokale als auch internationale Patienten profitieren vom Zahnpflege-Programm das Keramik-Inlays, Wurzelkanalfüllung: [mehr erfahren](#) **VENEERS Ab 310 €**

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**SEA SMILE DENTAL GROUP**

Phuket , Thailand

Sea Smile Dental am Patong Beach im thailändischen Phuket verfügt über eine breites Spektrum an hochqualitativen und günstigen Lösungen im Bereich Zahnpflege. Diese Zahnklinik bietet: [mehr erfahren](#) **VENEERS Ab 129 €**

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**MDENTAL CLINIC**

Budapest , Ungarn

MDental Clinic in Budapest, Ungarn, bietet eine

- Libanon (1 Kliniken)
- Malaysia (5 Kliniken)
- Marokko (1 Kliniken)
- Mexiko (22 Kliniken)
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- Ägypten (1 Kliniken)
- Österreich (1 Kliniken)

**SORTIERE KLINIKEN NACH ZAHNMEDIZIN BEHANDLUNGEN**

- Veneers (167)**
  - Keramik-Veneers
  - Komposit-Veneers
  - IPS e.max®-Veneers
  - Direkte Kompositveneers
  - IPS Empress Esthetics Veneers
  - Zirkonveneers
  - Snap on Smile
  - Lumineers®



**FOGÁSZ KFT**

Budapest , Ungarn

★★★★★ 12 Bewertungen  
Die FOGÁSZ Kft Zahnarztpraxis wurde 1991 gegründet. Sowohl lokale als auch internationale Patienten profitieren vom Zahnpflege-Programm das Keramik-Inlays, Wurzelkanalfüllung: [mehr erfahren](#) **VENEERS Ab 310 €**

" I am very satisfied with the clinic's services " ab Medigo User (Ungarn), Juni 2016

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**SEA SMILE DENTAL GROUP**

Phuket , Thailand

★★★★★ 20 Bewertungen   
Sea Smile Dental am Patong Beach im thailändischen Phuket verfügt über eine breites Spektrum an hochqualitativen und günstigen Lösungen im Bereich Zahnpflege. Diese Zahnklinik bietet: [mehr erfahren](#) **VENEERS Ab 129 €**

" Eine rundum herausragende Erfahrung " ab Medigo User (Australien), Juli 2016

[Siehe Details](#)



**MDENTAL CLINIC**

Budapest , Ungarn

★★★★★ 28 Bewertungen   
MDental Clinic in Budapest, Ungarn, bietet eine

# Screenshots HR Condition

**DrEd.com** Ihr Arzt im Netz

Wie funktioniert DrEd | Fragen zu DrEd | DrEd Erfahrungen | Kontakt

Suchen...

Männergesundheit | Frauengesundheit | Tests | Reisemedizin | Innere Medizin | Allgemeinmedizin

**Schnell & bequem** | **Absolut vertraulich** | **Kostenloser Versand** | **500.000 zufriedene Patienten**

## DrEd. Ihr Arzt im Netz.

**Erfahren, einfach und sicher.**

- ✔ Ärztlicher Rat & Behandlung Online, per Telefon & Video
- ✔ Von zu Hause, aus dem Büro oder unterwegs
- ✔ Sie erhalten Ihr Medikament am nächsten Werktag

So funktioniert DrEd

**1 Sprechstunde**  
Sie beantworten den kurzen ärztlichen Fragenbogen

**2 Diagnose**  
Der Arzt prüft, antwortet und stellt Ihnen ein Rezept aus

**3 Versand**  
Das Medikament erhalten Sie am nächsten Werktag

**Besuchen Sie eine DrEd Sprechstunde »**

Rezept: €9 - €29, je nach Sprechstunde. [Weitere Informationen »](#)

Medikament: Sie bezahlen den deutschen Apothekenpreis

Beliebte Sprechstunden

**DrEd.com** Ihr Arzt im Netz

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Suchen...

Männergesundheit | Frauengesundheit | Tests | Reisemedizin | Innere Medizin | Allgemeinmedizin

040 8740 8254

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TRUSTPILOT Hervorragend 9.5/10

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Medikament: Sie bezahlen den deutschen Apothekenpreis

Beliebte Sprechstunden

Beliebte Sprechstunden

- Erektionsstörungen »**  
Für fast jede Erektionsstörung gibt es eine Lösung
- Verhütung »**  
Pille, Pflaster oder Vaginalring zur Verhütung
- Chlamydien »**  
Erhalten Sie hier ärztlichen Rat ohne peinlichen Besuch
- Vorzeitiger Samenerguss »**  
Ärztliche Hilfe, wenn Sie zu schnell zum Höhepunkt "kommen"
- Pille danach »**  
Eine Panne bei der Verhütung kann immer passieren
- Bluthochdruck »**  
Es gibt keinen Hochdruck, den man nicht einstellen kann
- Haarausfall »**  
Medikamente können Haarausfall verhindern
- Blasenentzündung »**  
Ein lästiges Problem für viele Frauen
- Malaria prophylaxe »**  
Schützen Sie sich effektiv

Über DrEd

Was ist DrEd?

DrEd ist ein Anbieter telemedizinischer Leistungen. DrEd ermöglicht Patienten die Kommunikation mit Ärzten mittels einer Sprechstunde via Video, Telefon oder Fragebogen. Eine ärztliche Beratung und ggf. Behandlung kann somit patienten- und wohnortnah von zu Hause, aus dem Büro oder von unterwegs erfolgen.

Was ist die Idee hinter DrEd?

DrEd geht es um den möglichst barrierefreien und qualitätsgesicherten Zugang zu ärztlichen Leistungen. DrEd nutzt dabei die Instrumente der modernen Kommunikationstechnologie, um Menschen den Zugang zur medizinischen Versorgung möglich zu machen oder zu erleichtern. DrEd ist ein Angebot insbesondere für jene Patienten, die aufgrund eingeschränkter Mobilität oder zeitlicher Verpflichtungen Schwierigkeiten haben, einen Arzttermin wahrnehmen zu können. So schließt DrEd strukturell bestehende Versorgungslücken z. B. im ländlichen Raum und ermöglicht einen zeitnahen Arzt-Patientenkontakt. DrEd stellt damit eine zeitgemäße und versorgungspolitisch wichtige Ergänzung zu herkömmlichen Versorgungsformen dar.

Wie funktioniert DrEd?

Patienten wenden sich mit einem spezifischen medizinischen Anliegen an die Ärzte von DrEd und wählen dafür

Beliebte Sprechstunden

- Erektionsstörungen »**  
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- Blasenentzündung »**  
Ein lästiges Problem für viele Frauen
- Malaria prophylaxe »**  
Schützen Sie sich effektiv

Über DrEd

Was ist DrEd?

DrEd ist ein Anbieter telemedizinischer Leistungen. DrEd ermöglicht Patienten die Kommunikation mit Ärzten mittels einer Sprechstunde via Video, Telefon oder Fragebogen. Eine ärztliche Beratung und ggf. Behandlung kann somit patienten- und wohnortnah von zu Hause, aus dem Büro oder von unterwegs erfolgen.

Was ist die Idee hinter DrEd?

DrEd geht es um den möglichst barrierefreien und qualitätsgesicherten Zugang zu ärztlichen Leistungen. DrEd nutzt dabei die Instrumente der modernen Kommunikationstechnologie, um Menschen den Zugang zur medizinischen Versorgung möglich zu machen oder zu erleichtern. DrEd ist ein Angebot insbesondere für jene Patienten, die aufgrund eingeschränkter Mobilität oder zeitlicher Verpflichtungen Schwierigkeiten haben, einen Arzttermin wahrnehmen zu können. So schließt DrEd strukturell bestehende Versorgungslücken z. B. im ländlichen Raum und ermöglicht einen zeitnahen Arzt-Patientenkontakt. DrEd stellt damit eine zeitgemäße und versorgungspolitisch wichtige Ergänzung zu herkömmlichen Versorgungsformen dar.

Wie funktioniert DrEd?

Patienten wenden sich mit einem spezifischen medizinischen Anliegen an die Ärzte von DrEd und wählen dafür

Frankfurter Allgemeine

DER SPIEGEL



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- Erektionsstörungen
- Verhütung
- Gonorrhoe Test
- Hirsutismus
- Gonorrhoe
- Malaria prophylaxe
- Genitalherpes
- Haarausfall
- Vorzeltiger Samenerguss
- Raucherentwöhnung
- Akne
- Arginin
- Chlamydien Test
- Heuschnupfen

Weitere Behandlungen

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- Cholesterin
- Reisedurchfall
- Asthma
- Rosacea
- Chlamydien
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- Blasenentzündung

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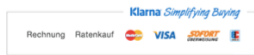
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Das ist DrEd

- Erfahrene deutsche Ärzte
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★★★★★ Michael

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## Sample Transcripts Contextual Inquiries

### Participant 6

Name of audio file: Inquiry P6

Duration of audio file: 01:03:56

Place and date of recording: Berlin, 04/09/2015

Date of transcription: 06/10/2015

Initial transcription done by: Tanja Schomann

Revisions: Tanja Schomann, 07/10/2015

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P6: Sind das Sachen über die ich mich informieren muss? Oder, also ist das einfach so, was kommt zuerst in meinen Kopf, woran denke ich, wenn ich bei Malaria Prophylaxe? Oder geht es wirklich um dieses online bestellen? Ich würd zum Beispiel keine Malaria Medikamente online bestellen. Weil ich das einfach nicht mache.

I: Ja, dann kannst du ja einfach dich auf die Art informieren, also wenn...

P6: Also ich informiere mich jetzt mal einfach so über Malaria Prophylaxe.

I: Genau.

P6: Ok.

I: Und vielleicht gibt es ja sogar einen so guten Onlineshop, dass du denkst, dass du es doch machen willst. Ach so, das mit dem klicken. Wir können das noch eben umstellen.

(kurze Unterbrechung, weil die Maus falsch eingestellt ist)

P6: Ok, bei dem Thema Malaria Prophylaxe kenne ich mich eigentlich aus. Aber wir gehen ja jetzt davon aus, dass ich da nicht viel drüber weiß. Wie ich mich jetzt informieren würde. Da würde ich eigentlich erst mal Malaria Prophylaxe googeln. Weil ich weiß ja nicht, bevor man so eine Reise macht, viele wissen ja auch gar nicht, oder das wusste ich ja damals auch nicht, ob es überhaupt eine Impfung gibt oder Pillen Prophylaxe oder was auch immer.

I: Du kannst auch von dem speziellen Fall ausgehen. Weil ich hab ja auch die Dauer aufgeschrieben und das Land, also falls du jetzt... Also das Land kennst du ja jetzt zufälligerweise auch. Aber das ist zum Teil ja auch spezifisch, ob man Malaria Prophylaxe nehmen muss oder ob das notwendig ist.

P6: Genau, wichtiger Punkt. Ja, ich glaube so vom Gefühl würde ich mich erst mal informieren, was es da überhaupt gibt und wie das funktioniert. So jetzt sehe ich hier, also ich habe jetzt eingegeben „Malaria Prophylaxe“ erst mal ganz allgemein. Und sehe jetzt hier an erster Stelle vom Tropeninstitut die Seite. Tropeninstitut klingt auch sehr vertrauenswürdig so eigentlich als Quelle. Das heißt... Das würde ich mir jetzt anders als... Klar wenn an erster Stelle jetzt Wikipedia gestanden hätte, hätte ich mir

wahrscheinlich auch das angeguckt. Aber so ist es vom Tropeninstitut und ich glaub das schau ich mal an... Jetzt lädt es gerade so ein bisschen lange.

I: Keine Ahnung...

P6: Kommt bestimmt gleich.

I: Jetzt. Aha.

P6: Soll ich zu der Seite jetzt auch direkt einen Kommentar machen?

I: Ja.

P6: Weil ich hab die gerade gesehen und ich muss sagen, ich hab beim Tropeninstitut irgendwie... Ich hab an ein professionelleres Design gerade gedacht oder ich hab ein professionelleres Design erwartet. Das sieht ein bisschen billo aus. (lacht)

I: Kannst du sagen, welche speziellen Elemente...

P6: Die Farben. Also dieses hier blau-gelb, aber dann diese orangene Hinterlegung und auch hier dieser Button zum Beispiel. Das sieht irgendwie so ein bisschen sehr... Naja, nach naja Ende 90er, Anfang 2000er... Naja nicht ganz so schlimm. Nicht ganz so schlimm. Aber ich hab mir eher was klareres gerade vorgestellt. Genau. So. Die Schrift ist ein bisschen klein, aber das liegt vielleicht auch an der Auflösung? So. Ist es inhaltlich auch wichtig, was ich hier auch mache? Was ich mir durchlese und so?

I: Ja. Und welche Informationen du hilfreich findest und verlässlich findest.

P6: Ich lese jetzt gerade hier oben den Text. Einnahme von Medikamenten. Chemo-prophylaxe, Expositionsprophylaxe, das sind halt auch erst mal so Wörter, die man nicht wirklich kennt. Ok.

I: Wirkt das denn abschreckend? Oder professionell?

P6: Wirkt schon professionell eher, ja. So. „Kein Stich, keine Infektion“. Der beste Schutz ist wenn man sich gar nicht erst stechen lässt. Ok. Medikamentöse Prophylaxe gegen Malaria. Steht hier „weitere Infos“, aber ich lese mir erst mal durch, was da so steht. Ah, jetzt weiß ich auch, was Expositionsprophylaxe bedeutet. „Die Auswahl der Medikamente richtet sich nach der Erregerempfindlichkeit der jeweiligen Region. Ärztliche Beratung“. Ok. Das heißt je nach Region werden wahrscheinlich andere Medikamente empfohlen...? So als Laie würde mir das jetzt auch alles nichts sagen. Dann würde ich wahrscheinlich... Mal gucken was hier noch so ist. Ach so, hier steht noch mal alles im Detail. Aha. Ok. Hier steht auch was mit Costa Rica. Steht hier Kenia irgendwo? Bestimmt nicht, aber ich kann ja trotzdem gucken. Weil das wäre dann der nächste Schritt. Das ich googeln würde, welche Prophylaxe ich in Kenia benötige. Malaria Prophylaxe Kenia (tippt). Mal gucken. Aha. Hier steht schon im Titel „Ihr Reiseziel - Empfehlungen“. Wieder beim Tropeninstitut. Ah ja. Hier kann man also sein Land auswählen. Wo finde ich denn jetzt...? Hier. Sehr kleine Schrift. So. Impfempfehlungen. Kenia ist ein Malarialand. (lacht). Das ist auch ein geiles Wort. (lacht) Ganz seriös. Risiko... Land unter 2.000 Metern (ließt). So: „Zur vorbeugenden Einnahme... Die vorbeugende Einnahme von Malarone oder Lariam

wird empfohlen“. Ok, jetzt habe ich hier schon mal zwei Medikamente, die ich nehmen kann. „Alternativ kommt Doxycyclin infrage. Das ist aber in Deutschland nicht als Malariaprophylaxe zugelassen.“ Ok. Jetzt würde ich wahrscheinlich in dem Schritt mal schauen, was Malarone für ein Medikament ist und was Lariam für ein Medikament ist und wodurch die sich unterscheiden.

I: Und wenn du jetzt darüber nachdenkst, inwiefern die Information, die du vom Tropeninstitut hast, verlässlich sind und, dass die ausreichend sind für den Schritt. Würdest du sagen das ist so? Oder würdest du sagen, da musst du die quasi auch erst mal validieren? Durch eine andere Seite.

P6: Ich glaube bei mir wäre tatsächlich der nächste Schritt dann auch schon der Arzt. Also. Ich finde die Seite sehr vertrauenswürdig vom Tropen... Jetzt im Nachhinein, wenn du mich fragst, aber da habe ich vorher nicht drüber nachgedacht: Tropeninstitut.de kann sich ja auch jeder kaufen als Domain. Da hab ich aber gerade nicht dran gedacht. Ich habe irgendwie nur gesehen: Tropeninstitut, das klingt irgendwie recht offiziell. Und wenn die das so schreiben, also ich hab das gerade gedanklich auf eine Stufe gestellt wie mit der Seite vom Auswärtigen Amt, wofür ich ja auch oft gehe um zu schauen wie sicher ist die Lage gerade in einem bestimmten Land. Und insofern... Ja, vertraue ich da gerade schon sehr stark drauf. Auf den ersten Blick. Jetzt wo du nachfragst kommen natürlich Zweifel aber die waren nicht da vorher.

I: Das heißt bis zu dem Schritt wäre es für dich jetzt hilfreich gewesen da nachzuschauen.

P6: Auf jeden Fall.

I: Und um dir das dann zu holen (das Medikament)...

P6: Und dann würde ich jetzt im nächsten Schritt, also im nächsten Schritt würde ich wirklich also entweder... Also das ist jetzt etwas schwierig, weil so ein bisschen bin ich ja schon drin im Thema... Wahrscheinlich würde ich tatsächlich direkt zum Arzt gehen und mich von dem beraten lassen. Weil ich auch die Person bin, die sich nicht so viel von Medikamentennebenwirkungen macht. Ich glaube so viel Wert lege ich da jetzt gar nicht drauf. Ich würde wahrscheinlich eher gucken, was ist das preiswerteste. Aber ansonsten würde ich jetzt halt nachschauen, selbst auf so Seiten wie gutefrage.net oder so was. Also gerade bei Malarone haben ja auch viele irgendwie schlechte Erfahrungen gemacht oder ich glaube auch bei Lariam mit Depressionen und so weiter. Und ich glaub da würd ich auch in solchen Portalen, die ja extrem unseriös sind, da schaue ich dann auch hin und wieder nach Erfahrungsberichten. Das würde ich in dem Fall auch machen glaube ich. Soll ich jetzt noch was weiter machen? Oder...?

I: Nee, ich glaube wir können auch sonst zum nächsten. Ich gucke mal... Ach so. Da ist die Zeit. Ja, gehen wir zum nächsten.

P6: Ja, was ich auch gerade sehr ver... Ich habe gerade überlegt, warum ich jetzt wieder auf diesen Link geklickt habe. Ich fand den Titel glaube ich am besten. Das ist halt so... Ja das hat man ja hier bei Google gerade schon gesehen. Hier, „Ihr Reiseziel - Empfehlungen“. Also das klingt irgendwie so... Deswegen... Mein Gedanke: Naja, dann ist das vielleicht so was von der Ebene wie das Auswärtige Amt und hat wirklich Ahnung. Die können mich professionell beraten. Genau.



I: Und die waren auch bei Google vor dem Auswärtigen Amt und den anderen...

P6: Richtig, genau. Die stehen an erster Stelle.

I: Ok, dann gehen wir mal zu Nummer 2.

P6: Wobei ich das gerade nicht bewusst gedacht habe. Also die stehen an erster Stelle.

I: Und du hast auch nicht auf die erste Stelle geklickt. Weil die erste ist ja eine Anzeige.

P6: Genau.

I: Hast du bewusst gesagt: „Auf die Anzeige will ich nicht klicken“?

P6: Ja, das ist bei mir ganz interessant. Ich klicke eigentlich nie auf Anzeigen. Grundsätzlich nicht. Weil ich...

I: Also auch bei diesen Google... Bei Google ist das ja schon noch etwas anders als Banner Werbung. Das ist ja schon irgendwie mit Adsense oder was auch immer da gemacht wird.

P6: Klicke ich auch nicht drauf, nee.

I: Ok.

P6: Nee, weil ich ganz oft die Erfahrung gemacht habe, früher, als das so anfing mit den Anzeigen habe ich immer die Erfahrung gemacht, da steckt sowieso nicht das dahinter was ich suche. Und wenn ich mir die hier schon angucke. Hier, Holiday Check. Das ist eine Seite, da buche ich einen Flug oder ein Hotel. Aber da gucke ich ja nicht drauf um mir Informationen für Medikamente einzuholen. Wahrscheinlich haben die die ja sogar hier. Wenn man jetzt hier drauf klickt. Wahrscheinlich haben die ja sogar so eine Infoseite darüber. (klickt auf den Link) Da ist jetzt hier ein Forum. Das muss ja nicht sein. Im Forum sind dann ja wieder irgendwelche Leute, die meinen sie hätten Ahnung. Also nee, da würde ich... Da hätte ich gar keine Ahnung mir das durchzulesen. Lieber was vertrauenserweckendes und auch was...

I: Offizielleres?

P6: Irgendwie aufbereitetes. Auch so wie hier diese Länderempfehlungen (deutet auf Tropeninstitut).

I: Ok. Dann zu Nummer 2.

P6: Ach so, ist schon weiter (bzgl. Des Aufgabenzettels, der aufgedeckt ist). Diabetes 2. Mmh. Ok. Puh, ja Diabetes 2. Also die Person, also ich bin ja jetzt schlecht informiert, das heißt ich würde erst mal schauen was bedeutet denn überhaupt Diabetes 2. Ich muss sagen, ich weiß es gerade gar nicht mehr so genau. Ich glaube Diabetes 2 ist das, was man mit dem Alter bekommt, oder? Oder ist das genau andersrum?

I: Kannst du ja nachschauen.



P6: So. Also hier die Anzeigen fallen schon mal raus, die beachte ich nicht, die nehme ich auch gar nicht wahr. Das ist so ein Automatismus bei mir. Ich gucke dann irgendwie gleich was danach kommt. So jetzt sehe ich hier „Diabetes Ratgeber“. Das klingt ja eigentlich ganz nett. Ich sehe hier in der Beschreibung, das hier schon was Interessantes anfängt. Also ein informativer Text. So, jetzt lese ich das, was hier steht.

I: Was ist der erste Eindruck vom Design und Layout und so?

P6: Ja, also ich finde die Seite auch durch das Apothekenlogo, also das habe ich jetzt auch nur auf den zweiten Blick gesehen... Aber ich finde die Seite wirkt irgendwie... Die wirkt gut geordnet, die wirkt seriös. Die wirkt grafisch auch schöner. Also hier ist halt so ein Stockbild drin. Also es ist irgendwie aufgeräumt. Und die grüne Überschrift ist irgendwie wie ein Zeitungsartikel auf TAZ.de, also es ist irgendwie aufgeräumt. Aber das ist mir sehr sympathisch. Und diese grün ist auch irgendwie... Das verbindet man ja auch irgendwie mit Gesundheit. So. Genau. Und halt klar, Diabetes Ratgeber. Ob jetzt von der Apotheke oder nicht, aber das Logo ist da. Und es weckt auf jeden Fall Vertrauen. So. „Hier finden Sie Informationen“... Ach hier unten geht es los. „Chronische Stoffwechselkrankheit“... Ach es ist doch der Typ, den man immer hat. Schon von Geburt an. So, ich soll mich ja jetzt eigentlich informieren über Diabetes Services. Also Diabetes Management. Ok, also mal angenommen ich hab das alles gelesen und weiß bescheid. Oder soll ich jetzt noch weiter gucken.

I: Hast du das Gefühl, dass du ungefähr jetzt mit den Informationen die du hast ein Tool schon bewerten könntest? Also das du ungefähr weißt, was du machen musst?

P6: Ach so, nee so tief hatte ich jetzt nicht gelesen...

I: Naja, also so lange du weißt es geht halt um Zuckerwerte messen und so, das ist ja eigentlich jetzt der Kernpunkt.

P6: Genau. Aber ich hab jetzt noch nicht so weit gelesen, dass ich jetzt genau weiß, was vielleicht bei dem Typ 1 anders ist als bei dem Typ 2.

I: Nee, das ist nicht so wichtig.

P6: Also was das Tool können müsste...

I: Ja, nee, es geht jetzt auch nicht um den Vergleich zwischen beiden. Es geht eigentlich um... Ja in erster Linie geht es ja sowieso darum, sieht es vertrauenswürdig aus.

P6: Ja ich würde eigentlich, wenn ich mich jetzt, also wenn ich auch die Diagnose bekommen hätte, würde ich natürlich nicht nur diese eine Seite mir angucken um mich über die Krankheit allein zu informieren. Ich würd dann bestimmt auch noch weiter googeln. Ich kann ja mal gucken. Naja, ist ja hier die gleiche Seite wieder. Symptome sind halt... Ja... Ich bin dann auch so ein Tab Fan (öffnet mehrere Tabs hintereinander). Ich mache mir dann auch mehrere... Zuckerkrank.de... Deutsches Zentrum für Diabetesforschung. Das klingt auch sehr seriös. Aber da habe ich glaube ich schon wieder Angst, wenn ich da drauf klicke, dass ich nicht verstehe was da steht. Weil das klingt zu sehr... Diabetes Forschung, ne?

I: Und Zentrum der Gesundheit? Wie klang das? Und Zuckerkrank.de?

P6: Das klang eigentlich gut, finde ich. Also Zuckerkrank.de, das klingt auch vielleicht so wie Leute, die selber betroffen sind und die so was wie so ein Portal vielleicht... Dass die selber ins Leben gerufen haben. So, Zentrum der Gesundheit. Ja. Das ist ja hier vielleicht so ein bisschen zugeschossen mit Werbung. Aber... Ja, das ist auf jeden Fall eine Seite auf der ich mich informieren würde. Ich gucke ja auch erst mal nur. Gerade eben ging es ja auch darum, welches Medikament soll ich mir holen. Jetzt geht es darum was ist es eigentlich überhaupt. Insofern finde ich das schon OK. Genau. Man weiß wieder...

I: Es wirkt schon wie eine glaubwürdige Seite? Die echt ist?

P6: Ja, das geht schon. Ja es sieht eigentlich ganz nett aus. Man weiß ja auch, dass die die Werbung halt auch brauchen. Ja. Man sieht auch, dass die auch über ganz viele verschiedene Themen berichten. Also sind sehr breit aufgestellt, haben wahrscheinlich da irgendwie ein Sammelsurium von Artikeln. Genau. Hier noch einmal gucken. Oh, sieht auch sehr schön aus. Schöne Farbe auch. Also es sieht auch sehr aufgeräumt aus. Sieht sehr klar strukturiert aus und anders aus als bei der, also jetzt hier Zentrum der Gesundheit, ist wirklich der Fokus Diabetes. Und das sieht man halt sofort. Hier: „Herausforderung Typ 2 Diabetes – wir übernehmen Verantwortung“. Scheint ja irgendwie der Slogan zu sein. Die ist schön, die Seite. (lacht) Genau. Also hier würde ich mich wahrscheinlich auch informieren. Hier würde ich wahrscheinlich auch eher hängenbleiben und würde alles durchklicken. Und mir alles genau durchlesen.

I: Weil es spezifischer für die Krankheit wirkt? Oder wegen dem Design? Oder was wäre der Hauptgrund?

P6: Weil es aufgeräumt aussieht und weil es so aussieht, als ob ich das wirklich innerhalb von einer halben Stunde das alles durchlese und ich habe halt den Überblick, wie viel da drin steckt. Und weil es Spaß macht, sich die Seite anzugucken. Weil die so klar strukturiert ist irgendwie.

I: Und wenn du sagst innerhalb von einer halben Stunde, ist das quasi passend für das Bedürfnis, das du gerade hast oder?

P6: Genau. Aber man hat ja manchmal so einen Kieker und dann will man sich zu bestimmten Themen informieren und ich wüsste genau, jetzt kann ich mich hier durchklicken und irgendwann habe ich mir alles angeguckt und dann bin ich schlauer. (lacht) Genau. „Ihr Beitrag zu Diabetes Therapie“. Hach nee, ich suche ja jetzt nach Diabetes Management Tools. Vielleicht steht ja hier was drin. Hier „Therapieüberwachung, Verlaufskontrolle, richtig messen“. Man muss ja auch eigentlich erst mal wissen, was... Also ich weiß nicht hier mit diesem Service, oder den Tools, also meinst du wirklich so Tools im Sinne von einer App? Also jetzt nicht Tool wie Zuckermessgerät?

I: Nee, Apps. Das hätte ich klarer schreiben müssen.

P6: Nee, ich hab es bei Lesen jetzt schon verstanden, wie du es gerade sagst. Aber wenn ich jetzt jetzt hier gucke, dachte ich, guck mal, das ist ja auch ein Tool. Genau, da würde

ich mir das ja wahrscheinlich erst mal durchlesen, was man alles beachten muss und was man messen muss. Und...

I: Und wie wirken so die anderen visuelle Mittel auf dich? Irgendwie Fotos oder die Logos oder so?

P6: Wirkt sehr professionell irgendwie. Also das sind sehr... So, also ich finde das Logo und alles auch so klar. Das wirkt nicht... Also ich bin jemand, ich mag aufgeräumt Seiten und ich mag klares Design und ich mag auch schlichtes Design und ich mag es auch nicht, wenn Sachen... Also ich muss sagen, die Fotos sind auch und das hier an der Seite... Das wirkt irgendwie sehr aufgeräumt. Und auch nicht unprofessionell oder so. Naja, irgendwelche Stockbilder wahrscheinlich auch. Aber es wirkt auch einfach ganz anders. Also es wirkt schon sehr seriös. Genau. Ja und dann... Ich bin ja auf der Suche nach einem Diabetes Management Tool. Jetzt gucke ich grad. Vielleicht finde ich ja hier was dazu. „Verlaufskontrolle“. Nee, das ist auch mehr so... Das man regelmäßig zum Arzt geht... Aha. „Diabetes Disease Management Programme“. Typ 2, ich bin ja auch Typ 2. Ist das jetzt ein Programm oder ein Programm? (lacht) Also es klingt gerade eher wie so ein Programm...

I: So mit Sessions?

P6: Genau. So ein... Wo man halt angeleitet wird oder so was. Ach so. Also „die Patienten werden aktiv in ihre Behandlung eingebunden und lernen so einfach mit ihrer Krankheit umzugehen“.

I: Ja, hört sich wirklich eher nach so einem Kurs oder so an.

P6: Ja, ich kann das ja mal hier markieren. „Disease Management Programm“ scheint ja irgendwie so ein Schlagwort zu sein. Aber ich frage mich gerade tatsächlich, ob das nicht wirklich was anderes ist als... Soll ich das... Soll ich das jetzt alles so machen?

I: Ich überlege gerade, weil wir jetzt schon recht lange daran... Ich glaube wir wechseln einfach mal.

P6: Ok.

I: Nächste Aufgabe... Dann würde ich Diabetes erst mal abhaken. Du bist geheilt. Dann machen wir doch noch einmal das hier.

P6: So. Mmh. Medizinreisen. Ok, also ich brauche Inlays. Ja und die möchte ich mir im Ausland während einer Medizinreise einsetzen lassen. Was würde ich denn da googlen? Vielleicht irgendwie „günstige Zahnärzte im Ausland“ oder so? Googlet man sowas? Ich weiß nicht. „Zahnarzttempfehlungen im Ausland“. Stiftung Warentest...? Das ist die Frage, weil ich weiß erfahrungsgemäß auch, dass bei Stiftung Warentest auch viele Artikel dann doch nicht zugänglich sind, wenn man reinguckt. Ach doch, hier steht etwas.

I: Nicht zugänglich, weil da eine Paywall ist oder was?

P6: Ja genau. Ich hab das schon ganz oft gehabt, dass ich was gesucht hab und dann konnte man sich das nicht angucken so richtig.

I: Aber generell, Stiftung Warentest, mit was verbindest du das?

P6: Das verbinde ich damit, dass die mir quasi transparent darlegen, wo ich Qualität erwarten kann und wo nicht. Also gerade, wenn ich darüber nachdenke mich im Ausland behandeln zu lassen medizinisch, machen vielleicht nicht alle, aber ich denke schon in erster Linie an meine Gesundheit, und ich will, dass es wenn dann ordentlich gemacht wird. Und da würde ich... Also klar, das allertollste wäre natürlich jetzt gewesen, würde irgendwo stehen, welche... Vielleicht steht's auch da. Ich habe es ja noch nicht gelesen... Welche Länder zu empfehlen sind und...

I: Und weil es ist quasi eine externe Quelle ist?

P6: Genau.

I: Weil du gerade meintest... Wie hast du es noch mal genannt.... „Transparent darlegen“, also transparent, weil die nicht damit verwickelt sind oder so?

P6: Genau. Stiftung Warentest, man kennt das halt. Und die haben, die geben ja auch ihr... Ich bin so schwer irgendwie im sprechen heute...

I: Zertifikate oder so?

P6: Genau. Also diese Banner, die auch oft auf Produkten immer drauf sind. Man kennt das und man verbindet das mit einer unabhängigen Institution, die Produkte testet, egal was es ist. Und wenn die über so ein Thema schreiben, also es war auch gerade tatsächlich der zweite Eintrag erst. Genau. Und da habe ich gedacht: „Da finde ich bestimmt verlässliche Informationen darüber, wo man sich umschauchen kann“. Also welche Länder da zu empfehlen sind oder worauf man achten muss, vielleicht auch einfach wie man einen Arzt auswählt.

I: Und die Seite, wie wirkt die auf den ersten Blick?

P6: Ja, sehr weiß. Aber das ist halt Geschmackssache. Ist halt so weiß-grau. Also ich fand dieses violett gerade, das fand ich war so warm und einladend (auf Zuckerkrank.de). Wie so eine Kuschelecke so ein bisschen. Und aber trotzdem klar und sauber. Und das sind jetzt andere Farben, aber deshalb wirkt es nicht unseriös. Ich finde das Design eigentlich auch sehr, sehr klar so muss ich sagen. Hier sieht man auch, dass das wieder ein Unterpunkt ist aus einem ganzen Dossier wahrscheinlich, was die hier anbieten. Das mit dem Logo, das kennt man halt. Joah. Wirkt sehr aufgeräumt. Wirkt auch seriös finde ich. Genau. Und das würde ich mir jetzt hier wahrscheinlich durchlesen.

I: Brauchst du natürlich nicht komplett lesen.

P6: (murmelt etwas vor sich hin, was sie gerade liebt) Ja, ok.

I: Aber die bieten ja jetzt noch keinen... Also du kannst ja jetzt nicht per Stiftung Warentest ins Ausland fahren.

P6: Nee, genau. Also ich sehe gerade hier steht, hier am Anfang steht irgendwie Polen, Tschechien, Ungarn. Das scheinen ja irgendwie Länder zu sein, die irgendwie üblich sind. Würde ich einfach mal googeln. „Zahnbehandlung Polen“.

I: Dass wir vielleicht auch noch auf eine Seite kommen, die auch tatsächlich das anbieten, das zu machen. Das wäre interessant.

P6: Oh jetzt...! Was wolltest du gerade sagen?

I: Nee, guck ruhig erst mal hier.

P6: Oh, jetzt sehe ich ja hier an erster Stelle meine Lieblingskrankenkasse, die TK. (freudig, lacht) Nee, ich mag die einfach, weil ich bin selber bei der TK und die sind einfach immer so freundlich zu mir. Also ich... Ja, doch, das spielt wirklich gerade rein. Weil ich rede halt sehr oft mit denen und die sind immer gut erreichbar und ich verbinde mit der TK einfach immer was sehr nettes, die sind einfach immer sehr hilfsbereit. Und der Titel hier auch: „Natürlich eine geprüfte Zahnklinik in Polen und Ungarn“. Jetzt erhoffe ich mir natürlich, dass hier... Ah ja genau. Genau das habe ich mir nämlich erhofft. Dass hier Kliniken aufgeführt werden, die für mich interessant sein können. Oups. Mit der TK... Also das ist ja eine mit der größten gesetzlichen Krankenkassen, mit denen verbinde ich schon sehr viel. Denen vertraue ich auch sehr. Sehr seriös. Ob sie das jetzt sind oder nicht. Aber das Vertrauen ist da. Ja, Ungarn ist ja ein bisschen weit weg. Ich gucke erst mal nach Polen. Die Frage ist, ah, klar haben die auch deutsche Seiten... So. Jaaa...

I: Wie ist der erste Eindruck?

P6: Ja, der erste Eindruck geht so. Ist auch wieder so ein bisschen retro finde ich. Also hier irgendwie so ein animiertes Bild, was aber auch irgendwie keinen Sinn macht. Was sich da runddreht. Ja... Kann man sich mal angucken. Also ich würde wahrscheinlich hier jetzt auch... Also soll ich noch kurz durchklicken?

I: Ja, kannst du. Genau.

P6: Also ich werde jetzt hier mal schauen... Ärzteteam. Also das finde ich eigentlich auch immer interessant. Also wer macht das denn eigentlich? Ok.

I: Und wie ist das so von den Informationen und den Bildern her? Ist das wonach du gesucht hast?

P6: Joah, also ich erhoffe mir jetzt eigentlich, dass wenn ich hier raufklicke... (lacht) Ach so. Ja. Genau, ich hab mir nämlich gerade erhofft... Genau. Weil erst mal ist es komisch, dass hier jetzt ist es doch auf polnisch auf einmal. Teilweise. Ich hab mir erhofft, dass ich da sehen kann, also jetzt hier in ihrem Fall zum Beispiel, was sie für eine Zahnärztin ist, wo sie studiert hat, wie lange die schon praktiziert...

I: Also das erfüllt quasi nicht die Erwartungen, die du von der vorherigen Seite hattest?

P6: Richtig. Das, also vielleicht ist es ja auch nur bei ihr so. Also würde ich bei ihm jetzt noch einmal schauen. Ich weiß, ich verstehe ja auch gar nicht, was hier unten steht. Weil es auf polnisch wahrscheinlich ist. Ja, da bin ich jetzt so ein bisschen gerade enttäuscht, weil

wenn man die Seite so sieht, hat man eigentlich Lust sich mal durchzuklicken. Aber gut. Aber da achte ich persönlich halt drauf. Weil ich will ja wissen, wer das macht. So, ich werde mal schauen, ob die überhaupt mein Produkt hier anbieten. Inlays... Ach so. Hier oben klappt sich das aus. Boah, das ist auch alles so klein. Aber das kann auch am Macbook liegen, dass die Auflösung so klein ist? Also weil die Auflösung so groß ist, ist das so klein.

I: Warte, ich probiere mal hier auf der Seite... Ob sich das irgendwie verändert... Nee, ich finde es auch sehr klein... Das ist ja irgendwie Größe 10 oder so.

P6: (lacht) Ja. So, das ist ja ein Implantat was wir brauchen.

I: Aber die Menüführung an sich, macht die Sinn für dich?

P6: Hat mich gerade verwirrt, weil es hat sich halt nach oben... Also ich musste erst hier raufklicken und bin dann auf eine neue Seite gekommen und hab dann natürlich automatisch runtergescrollt, weil ich dachte jetzt finde ich die Infos. Aber da war dann nur so ein allgemeiner Text und dann habe ich gesehen, dass sich das hier oben ausgeklappt hat. Aber das war ja vorher nicht so. Weil manchmal geht man ja auch rüber und es kommt automatisch oder eigentlich im Normalfall auch eher unten und nicht hier oben. (seufzt) So. So jetzt ist hier natürlich wieder so ein allgemeiner Text. Also hier steht jetzt auch nicht... Ach so. Hier sind jetzt auch Links... Jetzt würde mich natürlich interessieren, welche Implantate die verwenden. Und welche Qualität die haben. Also ich kenne mich ja in der Branche nicht besonders gut aus. Aber... Ich hätte ja schon irgendwie die Erwartung, dass die irgendwie Qualitätssiegel oder so auch haben. Von einer bestimmten Marke oder so.

I: Ja, aber da sind gar keine Infos, oder?

P6: Ich weiß nicht. Hier sind jetzt auch so Links. „Lösungen“... „Garantie“ steht hier unten noch. Jetzt gucke ich mir das hier gerade an. „Place, select“. Bravomax, damit kann ich irgendwie nichts anfangen. Ist polnisch und keine Ahnung... Damit assoziiert man natürlich auch automatisch wieder was nicht ganz so seröses. Was auch blöd ist. Wenn ich das jetzt ausspreche. Aber bei Qualität denkt man ja eher an deutsche Produkte als an polnische.

I: Mmh, ok. Ich gucke mal eben nach der Zeit.

P6: Ja, also da sehe ich jetzt auch kein Qualitätssiegel. Ich gucke noch mal schnell unter „Qualität“. Na hier ist auch keine Quelle angegeben. Ja, „95%, erfüllen ihre Aufgabe vortrefflich“. Ok. Das haben sie wahrscheinlich sich selber hingeschrieben.

I: Das heißt dann ja eigentlich die externe Quelle fehlt? Wenn es um Qualitätssiegel geht...

P6: Man... Also ich weiß gerade nicht, ob ich so genau hingucke, weil ich jetzt in diesem Test bin, oder ob ich das sonst auch machen würde... Aber ich denke, dadurch, dass ja eine Seite oder eine Klinik im Ausland ist, wo ich allgemein vorsichtig wäre... Würde ich glaube ich schon wissen wollen, worauf sich so eine Zahl beruft. Also gibt es da eine Studie? Wenn ja, wer hat die gemacht? Wenn jetzt hier ein Link wäre, zu einer Studie, die von irgendeinem externen Anbieter, meinetwegen auch von der Stiftung Warentest dann

rausgehen würde, dann wäre das auf jeden Fall wichtig für Trust, den ich entgegenbringe. Und so... Ist halt irgendwie so schlapp.

I: Das heißt, die Tatsache, dass es da um etwas Ernsteres geht, also um diese Reise, heißt du suchst noch nach mehr Bestätigung?

P6: Genau. Also ich würde halt... Ich will mich halt nicht ärgern, wenn ich halt zurückkomme. (lacht)

I: Ok.

P6: Aber da sind die Leute auch ganz anders. Wir haben ja bei Beauty (ihrem letzten Arbeitgeber) ja auch die Erfahrung gemacht, es gibt Leute, die gehen halt einfach nur auf den Preis. So bin ich halt nicht. Ich bin schon eher skeptisch.

I: Und die Tatsache, dass die TK damit zu tun hatte? Inwieweit ist das ausreichend als...

P6: Ja, siehst du. Das habe ich gerade schon wieder vergessen, seit ich auf die Seite gekommen bin. Dass ich ja über die TK reingekommen bin. „Geprüfte Zahnklinik“... Also ich sag mal so, dass würde mich jetzt nicht davon abhalten, mich nicht zu informieren und einen Termin mal zu machen oder auch bei der TK vielleicht selber anzurufen.

I: Oh, ich habe das Badezimmerfenster offen (es hat angefangen zu regnen). Sorry.

P6: Oh nein.

I: Ok, wieder da.

P6: Genau. Dass jetzt hier zum Beispiel bei den Ärzten die Beschreibung fehlt oder so finde ich echt nicht so professionell aber ich glaube jetzt wo du mich daran erinnert hast, dass ich das über die TK gefunden habe, würde ich mich da bestimmt auch noch mal informieren.

I: Ich überlege ob hier noch was dabei ist, was man kurz machen kann... (blättert durch Aufgaben).

P6: Also wegen mir musst du dir keinen Stress machen.

I: Ok, dann machen wir noch eins.

P6: Ich bin ganz entspannt.

I: Und wir hatten jetzt auch relativ viel in den einzelnen Sessions besprochen, dann brauche ich nicht so viel danach fragen. Dann machen wir doch noch das hier.

P6: Medizinische Selbsttests... Ja... Also ich würde erstmal Schilddrüsenunterfunktion googlen und die Symptome noch mal genauer angucken. Weil Selbsttest ist bescheuert eigentlich.

I: Ok.

P6: (Lacht und tippt) Schilddrüsenunterfunktion Symptome. So Vielleicht finde ich auch heute wirklich heraus, dass ich eine Schilddrüsenunterfunktion habe.

(Beide lachen)

P6: Ah (positiv erstaunt) Apothekenumschau. Ja, die Apothekenumschau liebt meine Oma und...

I: Als physischen Ausdruck?

P6: Richtig, genau. Und da erwarte ich mir... Und da habe ich mir einen einfach nur gut verständlichen Text erhofft so zu dem Thema als ich da drauf geklickt habe.

I: Und die Seite? Wie wirkt die erst mal?

P6: Die Seite wirkt erst mal etwas voll... Also da sind wieder... Also ich glaube das ist auch Werbung hier.

I: Ach so, und nur noch mal for the record, das war auch das erste Ergebnis wieder, oder?

P6: Ja genau.

I: Das war hinter den Anzeigen.

P6: Nach der Anzeige, genau. Ja, es wirkt ein bisschen voll wieder, ein bisschen zugeballert. Nicht so klar, hier gibt es wieder so eine Spalte, die hat wieder ganz andere Elemente. So ganz viele Elemente und ganz viel Text. Also irgendwie zwei Spalten sogar. Also etwas voll, aber ist die Apothekenumschau und ich denk mal, wenn ich mir hier die Symptome angucke werde ich bestimmt auch fündig. Genau. So. Ok. So jetzt lese ich mir das durch und denke, ja, tritt ja bei mir auch manchmal auf oder auch nicht. Und ich bin ja eigentlich schon auf der Suche nach dem Test. Also die Aufgabe ist ja ich möchte den Selbsttest suchen. Ja, kann ich ja mal machen. Ich weiß gar nicht... Diagnose... Vielleicht ist hier ja auch irgendein Test auch verlinkt, der irgendwie zuverlässig oder bekannt ist.

I: Aber von der Informationsaufbereitung und so, wie wirkt das auf dich? Oder die Menüführung? Und der Text, den du gerade so überflogen hast?

P6: Ja, die Menüführung finde ich gut. Auch, dass das unterteilt ist hier. Das macht es auch einfach zu lesen. Finde ich auch besser als wenn es ein ganz langer Text wäre. So klickt man das an, was man sehen möchte. Ok, das sind halt wirklich Tests, die man im Internet machen kann. Nee, doch. Ja. Naja, also ich finde jetzt hier keinen Link zu so einem Test. Hätte ich jetzt hier einen Link gefunden zu so eine Test, hätte ich auch gedacht, ja gut, wenn der da verlinkt ist, ist das vielleicht der einzige Test den es gibt im Internet und der ist dann irgendwie gut. Da hätte ich jetzt auf die Apothekenumschau vertraut. (Tippt) Selbsttest, oder? So. Schilddrüsenunterfunktion... Mmh, hier gehe ich jetzt auch gerade wieder auf das zweite. Onmeda, damit kann ich erstmal nichts anfangen. Meda kommt vielleicht von Medizin oder so. Weiß ich nicht.



I: Also du kennst das Portal nicht?

P6: Ich kenn das Portal nicht. Gesundheit.de kenne ich jetzt auch nicht, da erhoffe ich mir glaube ich mehr von. Weil ich mir denke, wenn jemand so eine Domain hat (lacht)... Ist das vielleicht seriös und so was kann ich ja gar nicht leiden. Das ist erst mal nicht richtig formatiert...

I: Also quasi irgendwelche Hieroglyphen im Text quasi.

P6: Richtig. Also hat einfach einer nicht richtig hingeguckt wahrscheinlich bei Onmeda. Der das gemacht hat. Und das wirkt so ein bisschen... Nee... Genau, also ich würde jetzt hier mal schauen. Testen Sie Ihre Schilddrüse. Ok, das ist jetzt wahrscheinlich einfach so ein Ankreuztest kann ich mir vorstellen. Ach hier, starten.

I: Die Seite erst mal kurz...

P6: Ja, Sorry. Die Seite...

I: Fällt dir irgendwas speziell ins Auge oder wie wirkt sie auf dich?

P6: Ja, wirkt jetzt eigentlich auch nicht so professionell, wie ich mir es erhofft habe von gesundheit.de, aber wenn die schon so einen Test anbieten, dann kann man den ja auch machen. Also man hat ja nicht zu verlieren. Genau. Wirkt auch so ein bisschen... Naja, mit Werbung zugeballert wäre übertrieben, es ist auch nicht so viel. Aber der Aufbau ist irgendwie so ein bisschen... Mit diesen Links hier oben. Wo man da irgendwie abgefangen wird. Und hier am Rand. Ja, aber das ist schon ok. Finde ich jetzt deswegen nicht total unseriös oder so. Genau und jetzt will ich hier den Test machen. Soll ich den einfach mal machen?

I: Ja klar, du kannst ja vielleicht auch zu den Fragen, die die Stellen was sagen. Also ob das jetzt... Also ob das glaubhaft wirkt, dass das ein echter Schilddrüsentest ist, also würde dir das irgendwie weiterhelfen.

P6: Huch. Jetzt bin ich, es ist gerade passiert, dass das zurückgeworfen wurde. Warum auch immer. Also ganz komisch. Also ich war bei der ersten Frage, hab auf ja geklickt und auf weiter. Ah ok. Nee. (lacht) Gut, also ist wahrscheinlich doch nicht so gut programmiert die Seite wie ich dachte. Das ist mir zu anstrengend. So jetzt gucke ich mal weiter. Hexal kennt man ja auch als Pharmaunternehmen. Hier „dieser kurze Test kann erste Hinweise auf eine Erkrankung...“. Komischer Satz. Naja, egal. So...

I: Und dass das ein Pharmaunternehmen ist, wirkt das eher positiv oder negativ? Also würdest du das eher...

P6: Im ersten Moment wirkt das eigentlich eher positiv auf mich, weil das ist ein Name, mit dem ich schon etwas anfangen kann. Klar, im zweiten Augenblick, vielleicht machen die den Test ja auch extra so, dass alle Leute... Aber so weit will ich gar nicht denken. Weil da bin ich eher nicht ganz so paranoid wie andere Leute. Auch wenn Pharmaunternehmen nicht so gut in der Kritik stehen, aber grundsätzlich würde ich dem erst mal vertrauen. Die Seite sieht so ein bisschen so aus wie so eine Daring Plattform oder so mit Schmetterlingen (lacht). Ist eigentlich auch ganz lustig sich das mal so anzugucken, auf was für Ideen auch

manche kommen. Und dann denke ich mir: „Und das ist jetzt die Seite von Hexal.de“. Ok... Aber das ist wahrscheinlich nur die Schilddrüsenseite hier. Genau, Schilddrüse.hexal.de. Naja, ok. Genau, dann würde ich hier jetzt den Test machen. Ansonsten wirkt es aber nicht abschreckend. Also die ist jetzt auch nicht vollgeklascht mit Kram. Kann man schon machen. Soll ich den nochmal machen den Test?

I: Ja.

P6: „Halsumfang zugenommen...?“ (schmunzelt) Boah ich hab ganz viel Appetit immer. (lacht)

I: Ja, ich auch (lacht). Auf Kuchen und so.

P6: Haarausfall... Am Ende denke ich wirklich noch, dass ich eine Unterfunktion habe... Ja, mein Haar ist irgendwie sehr glanzlos. Müde, ja, permanent. Das liegt aber auch am fehlenden Schlaf glaube ich (lacht). Ich friere sehr schnell... Ok. Klingt meine Stimme rau oder heiser?

I: Mmh, ich glaube nicht.

P6: So, Auswertung, ja.

I: Und von den Infos, die die von dir wissen wollten, wirkte das passend und also professionell?

P6: Angebracht?

I: Ja, angebracht.

P6: Joah. Finde ich schon in Ordnung. Ist jetzt nichts wo ich irgendwo sage... Naja, ich will ja auch wissen, ob ich diese Krankheit hab vielleicht. Insofern... Wenn die mich danach fragen, ob mein Stuhl weich ist, dann muss ich das halt da eintragen. (lacht) Und dass ist dann auch OK. Ja. Oh nein! „Sie sollten einen Termin bei Ihrem Arzt vereinbaren“! Sie können sich vorsichtshalber auch... Ja, da steht jetzt ich soll einen Termin mit meinem Arzt vereinbaren. Da denke ich aber erst mal jetzt: „Ach, keine Panik.“ Weil ich fühle mich ja gut, also ich hab jetzt gerade keine Beschwerden, die mir das Leben schwer machen. Also ich bin ja auf die Seite gekommen, weil in deiner Aufgabe steht, dass ich wohl doch Beschwerden hab. Finde ich interessant. Ich würde wahrscheinlich noch einen anderen Test machen. Oder mich noch weiter informieren. Hier steht auch gerade ältere Menschen haben oft nur wenige von den Symptomen. Da würde ich mich jetzt nicht dazuzählen. Ich würde jetzt auf jeden Fall nicht bei ein so einem Test direkt zum Arzt gehen, auch wenn das hier steht, dass ich das machen soll. Ich würde mich erst mal weiter informieren.

I: Also, liegt das einfach generell daran, dass du nicht so schnell zum Arzt gehst, oder liegt das daran, weil Hexal eine Pharmafirma ist irgendwie und du das nicht glaubst... Oder liegt das daran, dass du Tests allgemein nicht vertraust?

P6: Ich überlege gerade. Ich glaube nur weil ich einen Test, also den erstbesten Test gemacht habe, den ich da gefunden habe würde ich... Also unabhängig davon wie jetzt die

Seite aussieht und zu welcher Firma die gehört... Also ich würde auch auf einer ganz unseriösen Seite noch mal den Test machen. Also ich würde wahrscheinlich so zwei drei machen und die Symptome ansehen. Und dann würde ich unter Umständen, wenn es mir nicht gut geht auch einen Besuch beim Arzt machen. Die Voraussetzung besteht ja scheinbar, wenn ich den Verdacht habe. Und wegen einen einzigen Tests würde ich das jetzt nicht machen. Ich würde da tatsächlich erst mal weiter gucken.

I: Gut, dann... Dann sind wir jetzt im Grunde durch mit den Websites. Ich mache hier einmal die (URL) History auf. Genau. Also falls wir auf eine bestimmte Seite noch mal gehen wollen um irgendwas nachzuschauen oder so. Ja und zwar leg ich nochmal die Seiten, die wir bei den Szenarien durchgespielt haben hier hin. (legt Aufgabenzettel zurecht) Also, ja ich hab das jetzt ein bisschen umgestellt. Lass mich mal kurz einmal überlegen. Ja, vielleicht können wir ja damit anfangen, bei welchem Szenario du das Gefühl hattest, dass du im Internet damit am besten weitergekommen bist. Was dir am meisten geholfen hast, als du online was gesucht hast.

P6: Eigentlich bei allen. Ich hab nicht bei allen das gefunden, was ich gesucht hab. Also hier, bei der Malaria Seite, ging es ja zum Beispiel ganz schnell. Ich war auf der ersten Seite und hab eigentlich... Nee, stimmt nicht. Ich bin zwar wieder zurück gegangen zu der Seite, aber hab noch mal neu gegoogelt. Hinsichtlich des Landes und da habe ich dann ja eigentlich auch sofort gefunden, was ich gesucht habe. Das richtige Medikament oder wie die Prophylaxe überhaupt funktioniert und welche Medikamente es gibt. Und da wäre auch der nächste Schritt erst mal gewesen mich beim Arzt weiter beraten zu lassen. Genau. Da ging es relativ zügig. Bei den, bei der polnischen Klinik war es ein bisschen... Da hätte ich mir mehr erhofft. Und da gab es dann einfach nicht mehr Informationen. Da hätte ich dann vielleicht bei der TK noch mal angerufen oder so. Und hier bei den beiden (Diabetes und Schilddrüse) war es dann eigentlich auch ok. Da war ich dann auf diesen diesen Apothekenumschau Seiten und hab mir das angeguckt, hier war das mit dem Diabetes Management... Also bei dem Schilddrüsenfunktionsthema kam dann recht schnell das Schlagwort „Selbsttest“. Bei dem Diabetes Thema war dieses Diabetes Management bis auf dieses Programm, aber das war glaube ich etwas anderes, da kam das nicht so vor. Das hat den Eindruck gemacht, als ob das vielleicht nicht so üblich ist oder so... Ja. Genau.

I: Und von der Vertrauenswürdigkeit? Wenn du noch mal an die verschiedenen Seiten denkst und wie vertrauenswürdig du die findest? So im Vergleich?

P6: Ich überleg gerade. Ich denke immer noch an die TK. Naja, weil das ist halt so. Ich vertraue der tatsächlich. Weil es einfach eine gute, also ich verbinde einfach was gutes mit denen. Deswegen vertraue ich der Seite auch. Weil ich die selber schon kenne und da schon drauf war. Aber... Was gab es denn noch für Seiten. Stiftung Warentest. Da habe ich jetzt natürlich nicht DEN Artikel gefunden den ich mir erhofft habe. Aber hätten die jetzt eine Studie gehabt zu den verschiedenen Kliniken, wäre viel Vertrauen meinerseits da gewesen. Tropeninstitut. Naja, auf den ersten Blick ok, auf den zweiten Blick... Die Seiten waren nicht so super. Und dann fragt man sich, wer steckt eigentlich dahinter. Klar, es stand an erster Stelle. Aber es stehen ja auch andere Sachen an erster Stelle. So manchmal. Ja, die fand ich jetzt nicht so vertrauenswürdig im Vergleich zu Stiftung Warentest und TK. Und ich weiß gar nicht. Die polnische Klinik fand ich auch nicht so super gemacht. Aber so Apothekenumschau und so was, gerade wenn man sich zu Symptomen informiert oder auch um mal so einen Test zu machen auf jeden Fall, ja.

I: Ok.

P6: Oder ich fand auch noch diese Zuckerkrank, die fand ich auch noch gut. Die war so, man hat gemerkt, dass ist so ein Nischenthema und dass die sich darauf so fokussiert. So ein bisschen.

I: Gut. Welche von den Websites würdest du privat verwenden und welche eher nicht? Also wenn du jetzt überlegst, du hättest jetzt nicht die Szenarien, sondern dir passieren halt Sachen. Würdest du eher ähnlich vorgehen oder würdest du bei manchen Sachen dann sagen ich würde überhaupt gar nicht dafür online gehen?

P6: Nee, doch. Ich glaub das war schon so wie ich das sonst gemacht hätte. Ich überlege gerade. Nee. Also auch diesen Test und so, na klar. Würde ich auch selber Zuhause machen.

I: Dann noch, gab es irgendwelche Elemente oder Funktionen oder Zertifikate, die du bei den Websites vermisst hast? Ich überlege gerade selber, weil du hattest einmal ganz speziell... Ja, bei der polnischen Klinik. Da hattest du das schon ganz speziell gesagt. Aber hattest du noch bei irgendeiner anderen Seite das speziell im Kopf? Das du Siegel gern gehabt hättest? Oder eine andere Funktion oder so?

P6: Nee, das war tatsächlich bei der polnischen Klinik, dass ich mir irgendwie mehr Informationen hinsichtlich der Produkte erhofft hätte, die die verwenden für die Inlays. Also von welcher Firma das ist, ob das zertifiziert ist... Aber das liegt auch daran, dass ich halt bei Beautyvergleich gearbeitet habe und ganz genau weiß, dass es da riesengroße Unterschiede gibt bei sowas. Und dass es da auch einen Norm für gibt und Iso Richtlinien und so weiter. Normalerweise steht auch auf vielen Seiten immer, also bei dieser Schönheitschirurgie, die sind genormt nach Iso 3001 oder so. Das hab ich da jetzt gar nicht gesehen und das ist schon komisch. Aber das ist halt auch wieder dieser Background, den ich jetzt zufällig hab so ein bisschen.

I: Kannst du dich daran erinnern, ob auf irgendeiner Website angeboten worden ist direkt mit einem Arzt in Kontakt zu kommen? Also ob es halt nicht nur reine Informationen, sondern auch Interaktionen...

P6: Meinst du jetzt mit einem Arzt? Oder auch so...

I: Ja mit einem Arzt. Also über einen Chat oder über einen Anruf beim Arzt... Also irgendwie Interaktion mit einem tatsächlichen Arzt.

P6: Nee, ist mir jetzt gar nicht... Ich glaub bei dieser Zuckerkrank Seite war irgendwo ein „Wir beraten Sie“ oder so was. Wenn ich mich richtig erinnere. Also ich glaube da war so ein Bild... Soll ich mal gucken, schnell?

I: Nee, es ging jetzt speziell darum, ob es dir aufgefallen ist. Das ist eigentlich der Hintergrund von der Frage. Das ist interessant, ob das eine Rolle gespielt hat bei deiner Entscheidung.

P6: Ist mir nicht aufgefallen, aber ich hab auch nicht danach gesucht in dem Moment.

I: Ja und von den Inhalten her... Die Infos... Also welche haben dir gefallen und welche weniger? Also von den Texten her und von der Qualität.

P6: Also auch wieder so Designkram? Also manche waren so klein geschrieben, das finde ich dann immer ätzend. Und die waren halt nicht klar aufbereitet. Also auch zum Beispiel mit diesem Tropeninstitut, das war halt einfach so ein langer, kleingeschriebener Text. Da fand ich dann nicht die Apothekenumschau, aber eine Seite die auch so ein Apothekenlogo hatte... Welche war denn das?

I: Ach, das war glaube ich bei Diabetes.de oder so.

P6: Ja, irgendwie so was. Wo ich gesagt habe, das sieht so schön aufbereitet aus. Nee, das war es nicht. Aber du erinnerst dich auch, oder?

I: Ja, die irgendwie das gleiche Layout hatte wie die Apothekenumschau, oder?

P6: Ja, genau. Da war das sehr schön aufbereitet. Vielleicht vermische ich das auch gerade. Da war halt so ein Fünfzeiler, der den Artikel eingeleitet hat und eine gute Überschrift und ein Foto, das nicht so unprofessionell war. Und dann war ein Text oder das war vielleicht auch bei der Apothekenumschau, der in kleine Päckchen gepackt war. Und das man sich da so durchklicken konnte. Und so was finde ich immer gut. Und das fand ich auch bei diesem Zuckerkrank.de gut, dass du halt oben die verschiedenen Reiter hattest. Es war sehr übersichtlich. Wie gesagt, ich mag es auch, wenn ich abschätzen kann, ich kann das in einer halben Stunde durchlesen und dann hab ich schon so ein bisschen Input. Dann weiß ich schon mal so umfassend bescheid.

I: So ein bisschen so Planbarkeit und wissen was kommt und so?

P6: Ja, genau. Zu wissen, wie viele Informationen, also wie lange brauche ich um mir die durchzulesen und wie viele Informationen gibt es zu dem Thema überhaupt? Oder welche Aspekte beinhaltet dieses Thema? Was kann ich mir alles durchlesen. Also Therapie und Symptome... Genau. Übersichtlichkeit das zu sehen.

I: Und gab es irgendwo Texte oder Inhalte, die du nicht verstanden hast? Von Formulierungen oder von der Sprache?

P6: Eigentlich nur am Anfang, bei dem Malariathema. Da waren so ein paar Begriffe, die wurden später aber erklärt, als ich weitergelesen habe. Da konnte ich mir dann denken, was das genau bedeutet. Habe ich aber gerade wieder vergessen. Irgendeine Prophylaxe. Genau. Aber auf der polnischen Seite, als ich nach den Implantaten geschaut habe, waren auch irgendwelche Wörter mit drin, die ich nicht verstehen konnte. Wahrscheinlich irgendeine Terminologie oder so. Es war irgendein englischer Begriff. Weiß ich jetzt nicht. Wenn ich mich mit Implantaten beschäftigt hätte, wüsste ich vielleicht auch was das für eine Technik ist. In dem Moment wusste ich es nicht. Aber ich fand das jetzt auch nicht so wichtig. Ich hab ja nicht nach der Technik, sondern nach der Qualität geguckt.

I: Ok, das waren jetzt eigentlich die Fragen zu unseren Websites. Jetzt habe ich hier noch ein paar Fragen zu bisherigen Erfahrungen, also außerhalb der Studie. Hast du in der Vergangenheit schon mal medizinische Websites verwendet?

P6: Ja, auf jeden Fall. Ganz oft sogar.

I: Und welche? Irgendwie online Informationen oder online Konsultationen oder online Apotheken? Also was für ein Bereich?

P6: Online Apotheken gar nicht. Doch, da habe ich mal nach Malaria Prophylaxe geschaut, habe dann aber gesehen, dass sich das preislich nicht viel nimmt und habe das dann offline gekauft. Weil das für mich auch einfach unkomplizierter ist. Auch Konsultationen. Also so richtig, dass ich mit einem Arzt da geschattet hätte oder das gibt es ja auch, dass man Befunde einschicken kann. Das hatte ich auch noch nicht. Was ich oft mache, oder was wahrscheinlich alle oft machen, ist wenn ich irgendein Wehwehchen hab, dass man das dann googlet und dann landet man relativ schnell dann auch bei diesen Gutefrage.net, was eigentlich total unseriös ist und was auch Quatsch ist.

I: Also Foren vor allem?

P6: Ja, genau. Weil... Am Ende macht man sich sowieso selber nur verrückt und da kann einem der Arzt eigentlich auch sagen, was man jetzt hat oder nicht. Also so was hab ich auch schon durch. Genau. Ich hab letztens auch zu dem Thema Hochsensibilität, da hat mir eine Freundin von erzählt und ich hab danach gegoogelt und hab so einen Test gemacht und hab Symptome... Also Symptome ist das falsche Wort. Also so Aspekte davon durchgelesen. Auf diversen Seiten.

I: Auch wieder eher Foren?

P6: Nee, das waren auch so Ratgeber.

I: Kannst du dich noch an Namen erinnern von Websites, die du verwendet hast und die du gut fandst?

P6: Nee, ich glaub das waren auch immer andere. Ich kann kurz noch überlegen. Nee. Ich glaube nicht.

I: Und wie hast du dich damals entschieden, welche Websites du benutzt?

Beziehungsweise wie hast du die gefunden? Ich hab die gegoogelt und wenn der... Also ich glaube es liegt auch immer etwas an dem Titel glaube ich bei mir. Wonach ich die Sachen dann aussuche. Und wie wichtig mir das Thema ist. Also wenn ich mich einfach nur informieren will, ok. Aber wenn ich eine Zahn OP in Polen plane, dann gucke ich glaube ich auch genau hin. Aber wenn ich das Gefühl habe, dass in dem Titel oder im Zweizeiler was drin ist, dass da viele Wörter fett sind, die ich auch eingegeben habe, dann ist die Wahrscheinlichkeit sehr groß, dass ich da drauf klicke. Und auch wenn der Titel geordnet ist, also wenn der gut zusammengefasst das wiedergibt, wonach ich suche. Also, wenn das ein klarer Titel ist, dann klicke ich da eher drauf als wenn es halt so ein Schrott Titel ist. Aber selbst die gucke ich mir dann meistens, also wenn ich mich wirklich in ein Thema vertiefe, selbst die gucke ich mir in der Regel danach an. Also die erste Google Seite, wenn ich wirklich viel über ein Thema wissen will, schaue ich mir schon alle an, die Einträge. Aber halt erst die, die wirklich prägnant auf das passen, was ich gesucht habe. Und dann am Ende vielleicht noch die anderen.

I: Ok, dann... Genau. Für welche Art von gesundheitlichen Problemen hast du Websites benutzt? Also als Beispiel: für Notfälle, um Experten in der Gegend zu finden oder korrekte Verwendung von Arzneimittel oder Symptome oder was waren das so für...?

P6: Ja, zum Beispiel wenn man eine Beschwerde hat. Ich hab zum Beispiel auch mal nach meiner Pille gegoogelt so irgendwann als ich angefangen habe das zu hinterfragen. Da hab ich dann auch so Erfahrungsberichte durchgelesen. Genau. Und ich hab auch als ich in Tansania eine Creme verschrieben bekommen habe, hab ich die erst mal gegoogelt. Weil ich wissen wollte, ob es die jetzt nur in Tansania gibt oder ob das ein Wirkstoff ist, der überall angewandt wird. Das habe ich auch gemacht.

I: Und kannst du dich noch erinnern, ob du die Seiten, die du damals benutzt hast, ob du die vertrauenswürdig fandst? Oder ob du das schwierig fandst vertrauenswürdige Seiten zu finden?

P6: Also Erfahrungsberichte finde ich... Also finde ich schwierig. Also ich finde die eigentlich schon vertrauenserweckend, vor allem wenn sie negativ sind. Weil da hat dann jemand wirklich die Erfahrung gemacht und hat sie beschrieben. Also ich glaube bei Erfahrungsberichten, so lange die auch ausführlich sind, finde ich die auch vertrauenserweckend. Und wenn die so ausgewogen sind. Das habe ich auch neulich gehabt, aber in einem ganz anderen Zusammenhang, also jetzt nicht im gesundheitlichen Kontext. Da war ich auch auf einer Seite und die hatte halt nur 5-Sterne Bewertungen und auch immer nur so kurze und knappe. Und das fand ich dann auch irgendwie nicht so vertrauenserweckend. Die hatte auch ganz viele schlechte Bewertungen und die Guten waren halt alle nur so 5-Sterne und „alles toll“ und so ganz kurz. Und da dachte ich auch so, irgendwie komisch. Das fand ich gar nicht vertrauenserweckend. Ich überleg gerade noch. Also bei dieser Creme, die ich gegoogelt habe, da war es mir einfach nur wichtig, dass ich den Wirkstoff überhaupt finde. Also dass es den gibt, dass der irgendwo steht. Ich kann dir auch nicht mehr sagen, was das für eine Seite war. Nicht mal ob die deutsch war, ob die englisch war oder weiß ich nicht. Ich hab einfach nur geguckt, ob es den gibt und wofür der verwendet wird. Ja.

I: Ja, das waren im Prinzip auch die Fragen. Nur noch demographische Daten. Wie alt bist du?

P6: 22.

I: Und was für eine Ausbildung hast du?

P6: Bachelor.

I: In welchem Bereich grob?

P6: Afrikawissenschaften

I: Was ist deine aktuelle Beschäftigung?

P6: Arbeitslos.

I: Ok. Wie häufig verwendest du das Internet?

P6: Täglich. Stündlich. Permanent. (lacht)

I: Das waren eigentlich alle meine Fragen. Wenn dir noch irgendwas einfällt, was du gerne ergänzen würdest, kannst du gerne noch etwas erzählen, was ich nicht abgefragt habe.

P6: Ja, es war ja schon sehr intensiv gerade was wir besprochen haben. Gerade fällt mir nichts ein. Naja. Nee.

I: Dann sind wir jetzt durch. Ich mach das mal aus.



## Participant 18

Name of audio file: Inquiry P18.mp3

Duration of audio file: 00:44:48

Place and date of recording: Berlin, 06/11/2015

Date of transcription: 10/11/2015

Initial transcription done by: Tanja Schomann

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P18: Ok, ich gebe jetzt mal ein „Frag den Professor“. Ich benutze jetzt mal Google. Und google die Bewertungen. (ließt) Wie funktioniert frag-den-professor.de.

I: Die Bewertung, weil es eine externe...

P18: Eine externe Bewertung, ja. Also hier wird ja direkt frag-den-professor.de angegeben, aber das will ich ja nicht wissen. Ich greife jetzt mal auf 3SAT zurück, weil so Medien, die darüber berichten, finde ich eigentlich immer ganz gut. Das ist ja jetzt eigentlich recht kritisch. Also sowohl, dass es Risiken birgt und man nicht weiß, wer die Gesundheitsportale so zu sagen stellt im Internet und die Flut an Informationen sorgt für Unsicherheit. Das ist ja oft so, dass man wenn man googlet, dass man Schnupfen hat, dass da direkt stet das sind die Symptome von HIV oder so. Also finde ich ganz gut die Kritik. Ich muss sagen, hier sind jetzt keine... Was ich gerne hätte sind so User Bewertungen. Die werden mir jetzt hier nicht angeboten. Finde ich doof. Also ich hätte jetzt gerne was mit einem Bewertungssystem. Also, dass man sagen kann, man vergibt 5 Sterne.

I: Wie bei Tripadvisor?

P18: Genau, wie bei Tripadvisor. Mit 5 Sternen bewerten: Ich fand frag-den-professor super. Genau. Oder: Die haben mir total geholfen bei dem und dem. Das gibt es hier gerade nicht. Das finde ich ein bisschen doof. Also alles, was ich dazu jetzt finde, ist ja... Ja, hier ist jetzt noch eine Website... Aber die finde ich jetzt nicht so richtig informativ. Nee, das gehört eigentlich auch nicht dazu. Also das einzige, was ich gefunden habe ist jetzt 3SAT. Ja. Das andere hat damit eigentlich nichts zu tun.

I: Ok. Willst du die eigene Seite vielleicht zumindest auch noch mal anschauen?

P18: Von frag-den-professor.de? Ja. Ach, die bewegen sich. Das ist ja hübsch. Das sieht so ein bisschen gestellt aus. (lacht) Ja, hier wird ein Pressespiegel angeboten. Ok, aber den kann ich nur finden, wenn ich... Ja klar, weiß ich nicht, wenn man selbst einen Pressespiegel dahin stellt, wird man nichts auf die Website stellen, wo drauf steht, dass sie super unseriös sind oder so, ne?

I: Ja, wahrscheinlich.

P18: Also das fände ich jetzt nicht so vertrauenswürdig. Mit deren eigenen... Also suche ich jetzt quasi mein Problem raus und das löst dann quasi der Experte. Bewegt der sich auch? JA, der bewegt sich auch. Oh, das finde ich ganz schlimm. (lacht) Ja, wobei ich muss sagen, es sagt mir jetzt auch den ersten Blick nicht, wie diese Website funktioniert. Also ich gucke mir das so an und denke so: Ist das jetzt eine Infowebsite oder kann ich hier

was machen? Kann ich hier Experten... Also frag-den-professor.de sagt mir jetzt wahrscheinlich, dass ich da so eine Expertenmeinung bekomme, aber das wird mir jetzt bei der Seite nicht so klar.

I: Ok. Das heißt, dass du nicht wirklich weiter kommst?

P18: Nee.

I: Willst du noch irgendwas weiter anschauen oder meinst du, du hast eine Meinung gebildet?

P18: Ja, ich finde die nicht so gut.

I: Kannst du so zusammenfassen, was für eine Emotion die Seite in dir auslöst?

P18: Ja. Also sie ist halt durch dieses blau und dieses weiß sehr kalt gehalten finde ich. Also es erinnern tatsächlich so ein bisschen clean, medizinisch an das Wartezimmer vom Arzt. Und wie gesagt, ich finde diese bewegten Bilder furchtbar, schrecklich. Nicht unseriös, aber so ein bisschen manipulativ. Ich glaube es soll so ein bisschen darstellen, dass die Leute irgendwie nah und echt sind, dass das echte Experten sind. Das verstehe ich schon. Aber das spricht mich nicht an. Ich finde es eher ein bisschen gruselig.

I: Und auf einer Skala von 1 bis 10, wie vertrauenswürdig würdest du die Seite einschätzen? Also 10 ist das vertrauenswürdigste.

P18: Ja. Vertrauenswürdig. Mmh. 5?

I: Gab es irgendwelche speziellen Elemente, die du noch vermisst hast auf der Seite?

P18: Elemente? Ja, Übersichtlichkeit! Also einfach so ein: Hey, wie funktioniert das hier eigentlich. Weil die Startseite ist ja direkt Themen. Und genau, einfach so irgendwas wie eine mini Anleitung: Sie suchen sich ein Thema aus, wir befragen unsere Experten. Oder muss ich die Experten selber befragen? Genau.

I: Ok, dann gehen wir zur nächsten weiter. Und bei der, dass es mit E ist, das gehört so. Weil die eine Teilnehmerin es dann richtig geschrieben hat.

P18: Ich glaube, ich habe das schon mal gesehen. Und dann habe ich mich auch gefragt: Was soll das? Da finde ich den Namen schon unseriös. Ok. (ließt die Aufgabenstellung) Ich soll mich erst dafür online... Wie heißt das? Dokter? Na ich google das erst mal. Na hier super. Trustpilot Kundenbewertungen.

I: Ist das so etwas, was du vorhin auch gesucht hattest?

P18: Genau. Das würde ich mir dann als erstes angucken. Ok, sehr gute Bewertungen: 9,2. Und ich les dann aber auch, was die Leute schreiben. Weil wenn die alle nur positiv bewerten, weil die Lieferung super schnell ist, dann naja weiß ich nicht. Das ist jetzt nicht nur das, worauf es mir ankommt.

I: Weil es quasi nicht um den Service geht?

P18: Ja, oder wie vertrauenswürdig das ist. Da geht es ja um was anderes. Ich lese immer die negativen Sachen (lacht). „Bis heute ist bei mir nichts angekommen“. Ja gut, also es gibt hier hauptsächlich gute Bewertungen, weil schnell geliefert wurde. Ja ok und dann gibt es viele Gutscheine dafür. Das heißt die haben den Markt so ein bisschen kassiert und versuchen Kunden zu gewinnen. Ok, das ist jetzt Dokter Online. Dokteeer Online (lacht).

I: Und wie wirkt sie so rein optisch?

P18: Gut. Also wirkt erst mal wie eine Verkaufswebsite. Also da könnten auch Schuhe sein. Zalando oder so. Es bewegt sich. Was ich aber gerade gut finde ist, dass hier direkt steht: Was ist Dokter Online? Ermöglicht es Ihnen einfach und sicher Medikamente online zu bestellen. Also ich weiß halt direkt, was es ist für eine Website. Das spricht mich jetzt nicht so an mit dem Schlankheitsmittel so auf der Startseite. Finde ich immer... Ja, beliebte Kategorien werden jetzt dargestellt. Gut, dass... Ich hab jetzt kein Problem. Vielleicht würde ich jetzt mein Problem direkt finden. Nee, doch. Die finde ich schon ganz gut. Die haben halt hier auch noch zwei Siegel. Dieses Pharmachecker und Trustpilot. Das finde ich gut. Ich weiß zwar nicht direkt, was da für ein Qualitätssiegel dahinter steckt, das müsste man jetzt extra recherchieren. Aber dass sie welche haben, schafft bei mir so ein bisschen... Also das sind auch zwei die ich nicht kenne. Wenn da jetzt ein Label von einem Qualitätssicherungsanbieter wäre, wo ich schon wüsste, der ist unseriös, dann wäre das was anderes. Aber die beiden kenne ich nicht, deswegen vertraue ich dem erst mal. Ich kann ja noch mal gucken nach den Kategorien. Oh, ich finde die Kategorien gut geordnet. Also Schmerzen, Hautpflege, sonstiges...

I: Aber es ging ja speziell um die Malaria Sache.

P18: Ach ja, stimmt. Also nein, ich möchte mich nicht...! Also so etwas finde ich nervig.

I: Popups?

P18: Ja, Popups, dass man sich da anmeldet und irgendwie Rabatt kriegt und so was . Also dem vertraue ich irgendwie nicht. Also da denke ich, dass ist irgendwie nur so eine Masche um an Daten und Emailadressen zu kommen. Also ich will. Ja. Da würde ich auf Reiseapotheke gehen. Ja, Reisedurchfall und Malaria und da werden mir direkt die Malariamittle angeboten. Und dann steht hier Doxycyclin in Klammern Malaria. Ich weiß halt, dass ich Malarone brauche.

I: Ok. Vorbildung.

P18: Ja, aber ich glaube das würde mich verwirren. Ich meine Doxycyclin ist ein Antibiotikum und dann steht da in Klammern Malaria und dann würde ich auf den ersten Blick denken: Oh, vielleicht kann ich das gebrauchen und mir für 45 Euro kaufen. Da hätte ich dann ein bisschen Geld rausgeschmissen. Weil es ist zur Prävention. Aber Malarone wird mir angeboten. Ich kann ja mal kurz schauen. Da ist halt keine Bewertung für Malarone. Das finde ich doof. Das würde ich mir gerne durchlesen.

I: Da oben waren doch irgendwelche Sternchen. Aber da ist noch keine Bewertung abgegeben?

P18: Genau, da ist noch keine da. Das hätte ich gerne. Versandkostenlos. Das finde ich super. Rezeptpflichtig: ja. Gut, finde ich gut. Was mich bei so was dann immer nervt, das wäre mir zu viel. Also da jetzt mein Rezept, ich weiß nicht, ob ich das hinschicken muss oder einscannen muss oder was auch immer. Würde ich lieber zu einer richtigen Apotheke gehen, das Rezept hingeben, Medikament bekommen. Und das kostet mich irgendwie eine Viertelstunde, wenn ich hier aus dem Haus gehe.

I: Statt denen das irgendwie online zu schicken?

P18: Ja genau. Dann muss ich das Rezept nehmen, es einscannen oder abfotografieren, es schicken per Email... Genau, das wäre mir irgendwie einen Schritt zu viel. Ok. Ja und ich würde noch den Preis vergleichen. Also ich sehe hier den Preis, 95, 50 Euro. Ich würde noch bei Google schauen, ob ich das woanders günstiger bekommen kann.

I: Also bei anderen online Apotheken?

P18: Ja genau, das würde ich noch vergleichen.

I: Ok. Also im Prinzip wieder die gleichen Fragen. Welche Emotion löst die Website in dir aus?

P18: Ich gehe noch mal auf die Startseite. Ich finde sie positiver, ansprechender. Es verkauft halt was. Das habe ich ja schon gesagt. Es wird irgendwie deutlich, dass was verkauft wird und wirkt relativ seriös. Vermittelt tatsächlich irgendwie dieses Apotheken Feeling. Dieser Typ steht halt hier in seiner Apotheke. Und so ein bisschen so eine Mischung aus Gesundheit und Lifestyle finde ich. Und jetzt, wenn ich länger drauf geguckt habe, schreckt mich dieses Doktor mit E auch nicht mehr so ab wie am Anfang.

I: Da gewöhnt sich das Auge dran?

P18: Ja. Und ich finde das hier oben gut. Ich finde gut, dass da eine Hotline angeboten wird. Das spricht mich an. Also die ruft schon Vertrauen bei mir hervor, die Website. Ich finde sie relativ gut. Ich finde sie schon seriös, ja.

I: Und auf einer Skala von 1 bis 10, wie würdest du sie einschätzen? Also die Vertrauenswürdigkeit?

P18: 8.

I: Ok. Und gab es irgendwelche Elemente, die dir gefehlt haben?

P18: Gefehlt... Das fällt mir jetzt spontan nicht ein.

I: Würdest du die privat zuhause auch verwenden?

P18: Nein. Nee, weil... Für nicht rezeptpflichtige Medikamente vielleicht, aber für rezeptpflichtige Medikamente nicht.

I: Ok, dann gehen wir eins weiter. Zu Cardiogo.

P18: (ließt Aufgabenstellung) Ok. Ich google das erst mal, weil da ist ja keine Internetadresse angegeben. Cardiogo wird direkt angezeigt. Wow, da gibt es eine App für. Das finde ich super. Also wäre ich jetzt unterwegs und hier steht ja ich wäre auf Reisen und ich hätte das mir eh auf mein Handy geholt, dann würde ich mir jetzt die App runterladen. Aber wir haben ja jetzt hier den Laptop.

I: Die Browserversion erst mal.

P18: Ok, ja. Film würde ich mir auf jeden Fall... Ich schaue jetzt erst mal den Film. Obwohl, der geht zu lange.

I: Ja, wir können ihn ruhig eine Weile laufen lassen.

P18: Ja, aber ich weiß nicht ob ich... Im ersten Moment hätte ich den Impuls ihn mir anzuschauen, dann würde ich sehen, der geht 2:30, dann wäre es mir glaube ich zu lang.

I: Ach so, ich dachte du meinst jetzt wegen der Interviewdauer.

P18: Nee, auch privat. (Video läuft)

I: Das spricht mich jetzt nicht an, weil das entspricht nicht so meinem Leben (lacht). Die sind ja ein bisschen älter als ich. Ah, dann kann ich das gar nicht benutzen (es geht darum, dass man ein zusätzliches EKG Gerät benötigt). Ja, das ist ja spannend. Also ich würd das jetzt einfach abbrechen. Würde ich auch machen, wenn ich in der Situation wäre im Internet.

I: Ok und wie fandst du das Video?

P18: Fand ich gut. Erklärt halt genau was die machen. Also anstatt da einmal rum zu klicken, was die eigentlich anbieten ist der Film relativ... Also spricht für sich selbst.

I: Und so von der Seriosität her und so?

P18: Ja, doch. Den Film finde ich schon sehr seriös. Aber spricht mich halt nicht an, weil ich einfach eine andere Zielgruppe bin. Also ich finde das wendet sich halt tatsächlich an Personen, die halt schon kardiologische Vorprobleme haben und nicht jetzt, wenn ich jetzt gerade Herzstechen oder Ziehen hätte würde ich jetzt nicht aufgrund dieser Website jetzt sagen ich bestelle mir jetzt dieses EKG Gerät und melde mich da an.

I: Also während man quasi in einer Behandlung quasi drin steht?

P18: Ja. Und was mich dann halt, wenn ich den Film gesehen habe, dann würde mich als nächstes interessieren: Was kostet das denn überhaupt? Also das würde ich jetzt direkt... Nee, ich will keinen beispielhaften Servicefall. Wenn ich jetzt anklicke: Wie funktioniert es? Dann steht hier: Erfahren Sie mehr über unseren Service, wie er funktioniert, an einem beispielhaften Servicefall.

I: Also beantwortet deine Frage gar nicht.

P18: Nee, das ist mir zu nervig. Das ist nicht so schön aufgebaut. Das ist mir zu nervig. (liebt) „Jedes Beratungsgespräch wird unmittelbar danach... Krankenkasse eine Abrechnung gemäß der Gebührenordnung für Ärzte...“ Das finde ich wiederum gut. Weil das klingt erst mal danach, als könnte man die Kosten von der Krankenkasse bekommen. Nee, ich finde die Website nicht gut. Ich würde jetzt gerne eine eigene Seite haben, wo die Sachen aufgehen und nicht dieses... Also das Design finde ich nicht schön gestaltet.

I: Mit dem Scrollen runter?

P18: Mit dem Scrollen und dann ist hier wieder ein Video und ein Bild. Und dann scrollt man noch weiter runter und wieder ein riesiges Bild. Das ist jetzt schwer zu beschreiben. Aber nee, das finde ich nicht gut gemacht. Ich finde es sehr unübersichtlich.

I: Meinst du, du hast genug Infos zu dem Produkt? Oder möchtest du noch was anschauen?

P18: Nee, das reicht mir eigentlich.

I: Welche Emotionen löst die Website aus?

P18: Ich fühle mich... Naja hätte ich jetzt Herzprobleme, dann würde ich mich da jetzt nicht richtig aufgehoben oder Verstanden fühlen. Weil es halt wie gesagt mich nicht anspricht. Aufgrund der Altersgruppe und so, wenn wir bei Emotionen bleiben, ich wäre dann eher so ein bisschen GENERVT von dem Aufbau der Seite. Also weil ich dann eh schon besorgt bin und dann wissen will, was mit mir los ist und dann wäre diese Seite mir zu aufwühlend.

I: Überfordernd quasi?

P18: Überfordernd, genau. Da würde ich mich überfordert fühlen.

I: Ok und was die Vertrauenswürdigkeit angeht, wie würdest du die von 1 bis 10 einschätzen?

P18: So 7, 6. 6, weil da wird zwar suggeriert... Also diese Abrechnung mit der Krankenkasse. Das würde ich zwar so per se nicht glauben, aber steht da halt erst mal. Ja, ich glaub das soll einem schon suggerieren, dass das alles ganz einfach funktioniert, aber ich könnte mir schon vorstellen, dass die technische Umsetzung mit der Übertragung ans Mobilgerät quasi nicht so gut funktioniert. Deswegen bin ich da skeptisch. Ich würde sagen so 6.

I: Ok. Und gab es noch spezielle Elemente, die dir gefehlt haben auf der Seite?

P18: Elemente? Ja, Erfahrungsberichte. Ja, gefehlt hat mir eigentlich alles. Mir hat gefehlt, dass hier eine ordentliche Seite aufgeht, wenn ich was anklicke und ja... Genau, das hätte mir gefehlt. Ja, eine übersichtliche Website hat mir gefehlt.

I: Ok. Ja, würdest du die privat nutzen?

P18: Nein.

I: Ich muss mal kurz schauen, wie lange wir schon dabei sind. So, dann machen wir noch Medmedo.

P18: (ließt Aufgabenstellung) Also ich benutze immer Google. Ah, jetzt habe ich es falsch geschrieben.

I: Ich wollte schon sagen, dass sieht irgendwie anders aus.

P18: Ah, hier. Medmedo. Ah, da gibt es einen Fokus Artikel. Das ist eigentlich super, das würde ich mir erst mal durchlesen.

I: Ach so, was ich gerade auch nicht gefragt habe. Bei der allerersten Seite waren wir ja bei SWR. Hattest du speziell das Gefühl. Das SWR...

P18: 3SAT.

I: Das 3SAT eine gute Quelle ist?

P18: Ja. Also 3SAT hätte ich gesagt ja, wenn das jetzt bei bild.de gestanden hätte, wäre ich da skeptischer gewesen.

I: Und Fokus?

P18: (lacht) Fokus ist so eine Grauzone. Also ich würde mir den Artikel jetzt mal kritisch, also würde ich mal angucken. Das ist so ein bisschen Inhaltsabhängig. Jetzt geht dieses Popup nicht weg.

I: Da: Nein Danke.

P18: Ah.

I: Leicht kompliziert.

P18: Ja, jetzt wüsste ich halt nicht, wie ich das zweite angucken kann. Deswegen. Also den Artikel. Das wäre mir jetzt zu blöd da irgendwie zu gucken, wie ich auf die zweite Seite von dem Artikel kommen kann. Also gehe ich direkt weiter zur Website. (ließt) Sie und Ihre Familie... Expertenmeinung.“

I: Wie wirkt die?

P18: Sehr gut. Auf den ersten Blick sehr ansprechend. Da auch mit dem Kind und „von Ärzten UND Fachärzten für Sie und Ihre Familie“. Also da fühle ich mich auch angesprochen und nicht jetzt wie bei der Seite, die wir vorher hatten, fühle ich mich da eher integriert. Als in den Kreis der Golf spielenden Herzpatienten. „Wir garantieren 100%ige Kundenzufriedenheit“. Das ist ein großes Versprechen. Und die haben halt direkt auf der Startseite die Qualitätssiegel und das ist glaube ich auch dieses Trusted... Ja, garantiert. Ja, das zum Beispiel, das Siegel, kenne ich. Finde ich ganz gut. „Konzept bekannt aus...“ Ja, das finde ich ein bisschen unseriös. Dass sie dann sagen das Konzept ist bekannt aus den ganze, aus dem Spiegel, aus der Süddeutschen,... Das heißt sie legen scheinbar viel Wert auf so Vermarktung. Das erinnern mich so Teleshopping.

I: Ja (lacht).

P18: Und „unsere Kunden über uns“ finde ich auch nicht gut. Also bei so was habe ich immer das Gefühl, wenn sich Leute da hinstellen mit Ihrem Gesicht und dann steht da Xenia, 27, Berlin. Da habe ich immer so das Gefühl, dass das so eingekaufte Schauspieler oder so sind.

I: Also keine authentischen, richtigen Personen?

P18: Ja, genau. Dem vertraue ich auch erst mal nicht. Das finde ich aber gut mit den Ärzten. Das hier einfach steht, ganz kurz einfach... Ne? Die bewegt sich nicht, sondern die ist da einfach mit ihrem Bild, was vielleicht auch gar nicht so vorteilhaft geknipst ist. Da steht einfach sie ist Allgemeinärztin, seit 12 Jahren Praxiserfahrung und hat halt hier ihre Bewertung. Das finde ich gut. „Jetzt Antwort erhalten. Neurodermitis habe ich, ne? OH, das finde ich super. „Wählen Sie Ihr betroffenes Körperteil“ (es geht um ein interaktives Körpermodell). Neurodermitis habe ich halt an den Armen und in den Kniekehlen. Und im Gesicht.

I: Das habe ich jetzt nicht so genau beschrieben muss ich sagen.

P18: „Bitte wählen Sie Ihre Symptome“. Ich schreibe einfach mal rein. Ich weiß ja, was ich hab. Neurodermitis. Das ist doof jetzt. Das gibt es nämlich nicht. Obwohl Neurodermitis ja eine sehr häufige Krankheit ist, wird mir als erstes nur Windeldermatitis... Nein. Ödeme, Probleme mit dem Aussehen der Nase, Würmer... Also da werden mir Sachen angeboten, die ich nicht habe. Ok, dann muss ich das nochmal tatsächlich mit den Symptomen machen. Jucken, Haut... „Jucken der Kopfhaut, der Ohren, vaginaler Juckreiz, rektaler Juckreiz,...“ Pffh, das ist jetzt auch nicht das, was ich habe. Das ist natürlich jetzt doof. Nee, das finde ich nicht so richtig... Also, wenn ich jetzt Neurodermitis habe und ich will was wissen...

I: Also nicht so richtig nutzerfreundlich, wie das jetzt läuft?

P18: Nee, ich dachte gerade das wäre so, aber... „Jetzt Antwort erhalten“... Geht das nicht anders? Nee, irgendwie finde ich... Ok, ich hab es im Gesicht. Ja, da schlagen die vor Hautausschlag, das könnte man eingeben.

I: Oder Hautjucken.

P18: Hautausschlag, ok. Oder Hautjucken. Jetzt kann ich also so zu sagen lauter Symptome wählen. Ja, das reicht jetzt auch an Symptomen. Vier. Ich kann auch Bilder hochladen. Das würd ich jetzt nicht machen. Also ich würde mich jetzt nicht hinstellen und erst mal Bilder von meiner Neurodermitis machen. Dann kann ich auswählen, seit wann das auftritt. „Haben Sie ein Trauma oder eine Verletzung erlitten“. Nein. „Haben Sie spezielle Fragen?“. Nein, habe ich auch nicht.

I: Kannst ruhig meine Emailadresse angeben. Gib einfach mal tanja.online@gmx.de ein.



P18: Ach, kannst du dich einloggen? Coupon Code. Also ein Coupon Code für einen medizinischen Service finde ich auch irgendwie komisch. Das finde ich nicht so trustworthy. Das würde ich jetzt gerne mal machen mit dem Honorar festlegen.

I: Warte mal. Ach, hier haben wir meine Adresse schon mal genutzt. Ich gebe mal noch eine andere von mir an.

P18: Ach so, ja, die AGBs. Ich glaube... Ok, jetzt ist auf jeden Fall die Website schon überfordert.

I: Ach so... Wahrscheinlich weil...

P18: Wir nehmen die mal raus. Ja, jetzt funktioniert es ja schon nicht mehr.

I: Ja. Also wahrscheinlich müssen wir es noch einmal komplett neu machen.

P18: Ok, finde ich doof. Das NERVT mich schon.

I: Wollen wir es noch einmal kurz eingeben? Dann kannst du das anschauen mit den... Vielleicht behält er das ja auch (die vorherige Auswahl an Symptomen“.

P18: Läsion, Hautläsion kann man auch machen. Oder Trockenheit, Rauigkeit der Haut.

I: Dann gebe ich noch mal die andere Emailadresse von mir an.

P18: So, weiter.

I: Und jetzt klappt es hoffentlich.

P18: So, jetzt wird erst mal gerechnet. „Das ist die vorläufige Antwort durch ein maschinelles Lernsystem.“ So, das finde ich jetzt komisch. Weil vorhin wurde mir ja suggeriert, ich kann irgendwie Ärzte befragen, Fachärzte und Ärzte. Und jetzt steht hier: „Das ist eine vorläufige Antwort durch ein maschinelles Lernsystem“.

I: Also quasi gar nicht das, was du am Anfang erwartet hattest.

P18: Genau, gar nicht das, was ich erwartet hätte. „Das trifft auf Dermatitis zu“. Das interessiert mich nicht, weil das weiß ich ja schon. Also ich wollte ja eigentlich eine Expertenrat. So und dann kann ich noch anklicken: „Brauchen Sie eine professionelle Meinung“. Ja, einen Arzt fragen. Damit habe ich jetzt schon ziemlich viel Zeit vertrödelt eigentlich. „Wählen Sie Dringlichkeit und Detailgrad aus“. Detailgrad? Wüsste ich jetzt nicht, was das heißt. „Betrag, den Sie nur zahlen, wenn Sie mit der Antwort zufrieden waren: 36 Euro“. Ok, das heißt ich soll 36 Euro dafür bezahlen, dass ein Arzt sich ein Foto von mir anguckt, sich diese 3 Symptome, die ich angegeben habe durchlieft und mir dann sagt: Sie haben Neurodermitis. Nee. (lacht) Da gehe ich lieber zum Arzt, lasse das meine Krankenkasse abrechnen und... Ja, genau.

I: Ok, dann... Welche Emotionen hat die Website in dir ausgelöst?

P18: Ja, zuerst fand ich sie sehr freundlich, sehr ansprechend, vertrauensvoll. Die Startseite. Und dann später hat sie mich so richtig genervt und wütend gemacht. Also dass ich sowohl nicht das eingeben konnte, was ich wollte, das nicht gefunden wurde, als auch diese maschinelle Antwort. Also ich hab mich so ein bisschen tatsächlich veräppelt gefühlt.

I: Auf der Skala von 1 bis 10, wie vertrauenswürdig findest du die Seite?

P18: Jetzt gar nicht mehr. Also nach Benutzung 1.

I: Ok. Kannst du noch einmal die Aspekte nennen, die jetzt besonders schief gelaufen sind?

P18: Schief gelaufen ist, dass mir auf der Startseite eine Expertenmeinung von Ärzten und Fachärzten suggeriert wird und nach dem ersten Angeben meiner Symptome dann erst mal dieser Logarithmus durch läuft, der das abprüft, was es sein könnte. Dann hätte ich meine Symptome gleich googlen können. Genau, das finde ich unseriös. Und ja dann, man gibt an wie dringlich es ist und danach berechnen sich dann auch mit die Kosten. Also, wenn ich schnell eine Meinung haben möchte, dann muss ich auch tiefer in die Tasche greifen. Und, dass ich halt noch gar nicht so richtig weiß, wofür ich bezahle. Also da steht zwar irgendwie: „Nur wenn an zufrieden ist“, aber ich weiß nicht, wie kompliziert das dann ist zu sagen „Ich bin unzufrieden und ich will mein Geld wieder haben“.

I: Ok. Ja, würdest du die privat benutzen?

P18: Nein.

I: Habe ich mir fast gedacht. Dann, Moment ich hatte glaube ich nur vier rausgelegt... Ach, einen habe ich noch. Ja, ich glaube eine schaffen wir noch und dann gehen wir weiter.

P18: Ordermed. „Beim Arzt vorbestellen und direkt an die Apotheke liefern lassen.“ Das klingt gut! Ok. Das klingt erst mal so, als würde ich es benutzen. „Folgerezepte beim Arzt online ordern“. Oh, gibt es auch als App. Orderapo. Nee. Orderapo gibt es noch. Ok. Aber ich nehme jetzt Ordermed. Oh ja, hier wird gleich erklärt, wie es geht. „Arzt erhält Ihre Rezeptbestellung, Apotheke wird informiert, Ware ist heute noch abholbereit, Apotheke liefert auf Wunsch auch aus.“ Ja, super. Gleich...

I: Überzeugendes Konzept?

P18: Ja, vor allem auch gleich auf der Website vorgestellt. Das erste, was man sieht. Ja gut, diese Videos von den Ordermed Nutzern, denen würde ich jetzt nicht vertrauen. Also ich würde mir die jetzt nicht angucken und denken: Oh, da haben Sie ja authentisch was gefilmt. Das finde ich super. „Was passiert eigentlich im Hintergrund?“. Das Angebot von der App finde ich auch super. „Ist meine Apotheke dabei?“. Finde ich auch super. (lacht) Kann ich gleich alles überprüfen, was mich interessiert. Genau, jetzt kann ich hier direkt vorbestellen. Ich will mein Rezept haben. „Ist meine Apotheke dabei?“ muss ich erst mal anschauen. Also ich gebe eine Postleitzahl ein. Hier von Berlin und kann dann hoffentlich auch sehen, welche dabei sind, wenn meine...

I: Das ist nicht richtig geladen. Willst du vielleicht noch einmal komplett neu laden?

P18: Ja.

I: Die sieht nämlich erfahrungsgemäß sonst anders aus. Naja.

P18: Nee.

I: Dann gibt es da ein technisches Problem.

P18: Ich finde das Logo nicht so schön. (lacht)

I: Einfach vom Design?

P18: Vom Design. Also kann ich jetzt quasi erst mal nicht prüfen, ob meine Apotheke dabei ist.

I: Das ist ja irgendwie ärgerlich.

P18: Schade. Aber ich kann ja noch mal da oben gucken bei „So geht es, so starten Sie, so sieht es aus“. Ah, ich kann mich auch einloggen und registrieren. Ja, das Konzept wiederholt sich so ein bisschen. Also so... Alles rund ums Geld. Ah: „Der Service ist für Sie als Kunde Ihrer Apotheke vollkommen kostenlos und die App auch“. Das finde ich gut. Also ich zahle quasi nichts drauf dafür, dass ich diese Website benutze. Wahrscheinlich geben die... Die Apotheken zahlen dann wahrscheinlich dafür. Also das würde ich mich dann fragen. Also was haben die für einen Mehrwert davon, wenn die von den Endnutzern nichts einnehmen.

I: Ja, schade, dass die Seite, dass die Apothekensuche nicht funktioniert. Tja.

P18: Aber so vom Konzept her finde ich es RICHTIG gut, weil mich nervt das immer beim Arzt anrufen zu müssen: Ja, ich möchte mein Rezept bitte.

I: Ja, schade, dass wir da nicht weiterkommen. Aber wenn das in der Realität mal nicht geht, wie...?

P18: Dann würde ich es nicht benutzen. Also ich würde es aber tatsächlich wieder... Weil das Konzept überzeugt mich. Das finde ich gut. Würde ich dann einfach morgen noch mal versuchen.

I: Ja, welche Emotion hat die Website in dir ausgelöst?

P18: Emotion... Also sie stimmt mich fröhlich (lacht). Nein, also ich fühle mich angesprochen, ich bin demgegenüber positiv eingestellt, positiv überrascht auch davon. Und ja...

I: Ok. Und auf der Skala von 1 bis 10, wie vertrauenswürdig schätzt du die ein?

P18: 10.

I: Und welche Aspekte fandst du besonders vertrauenswürdig und welche eher nicht so?

P18: Besonders vertrauenswürdig finde ich diese: „Was passiert alles im Hintergrund“ kann ich mir angucken. Dass sie eine App anbieten... Also das Konzept wirkt auf mich sehr vollständig. Also die haben sich sehr viele Gedanken darum gemacht. Das heißt, diese ganzen Prozesse, die da scheinbar hinter stecken, ist dann halt das, was ich sehr vertrauenswürdig finde. Dass die nicht einfach mal so schnell hingeklatscht ist, die Idee. Was fand ich nicht so vertrauenswürdig. Naja, ich finde dann immer so gestellte User Bewertungen oder gestellte, fröhliche Kunden finde ich unnötig. Das brauche ich nicht, weil es ist irgendwie offensichtlich, dass die Leute sich nicht haben auf der Straße fotografieren lassen. Oder hier diese Videos der Ordermed Nutzer, der angeblichen Ordermed Nutzer. Also dem vertraue ich auch nicht. Wenn ich das angucke denke ich nicht: Ach, das hat mich jetzt überzeugt, dass die Frau Müller damit so glücklich ist. Da würde ich dann lieber ein offenes Forum oder so haben, wo die Leute reinschreiben können: „Fand ich super“ oder „Fand ich nicht so gut“.

I: Wo es einfach authentischer wirkt?

P18: Ja, authentischer.

I: Ja, würdest du die privat benutzen, die Seite?

P18: Ja.

I: Gut, dann sind wir mit denen eigentlich durch. Ich lege die noch mal im Vergleich so hin. Ich lege die am besten in der richtigen Reihenfolge hin. Mit dieser haben wir angefangen. Ja, noch einmal so im Vergleich: Welche hat den besten und welche hat den schlechtesten Eindruck hinterlassen und warum?

P18: Also, am schlechtesten fand ich Medmedo. Da habe ich mich sowohl unverstanden als auch abgezockt gefühlt. Also weil ich weder meine Krankheit richtig eingeben konnte als auch, ja, dass ich dann direkt zur Kasse gebeten werde. Am besten fand ich, naja, Ordermed und Dokter Online sind so ein bisschen unterschiedlich von dem was sie machen, weil das eine ist ja eigentlich eine Versandapotheke und das andere ist der Schritt davor. Finde ich beide super. Also in dem was sie machen, finde ich es gut. Ja, Dokter Online. Ja, ich glaube ich würde halt Versandapotheke googeln und würde mir dann die Kritiken durchlesen, welche Versandapotheke die besten Kritiken hat und danach würde ich auswählen.

I: Ok. Also einfach noch mal ein breiteres Spektrum quasi...

P18: Genau, ein breiteres Spektrum. Wobei Ordermed glaube ich in der Sparte, da habe ich noch nie von gehört, das heißt wahrscheinlich gibt es da noch nicht so viele Anbieter, die diesen Service anbieten. Ja, und frag-einen-professor und Cardiogo... Fand ich jetzt beide nicht so. Ja genau, also Medmedo so als Negativbeispiel, exemplarisch, und Ordermed und Dokter Online als Positiv. Also in der jeweiligen Sparte. Wobei, wenn, dann fände ich Ordermed noch besser. Ja.

I: Gut, dann sind wir mit denen komplett durch und dann stelle ich dir noch ein paar Fragen zu bisheriger Erfahrung mit medizinischen Websites. Ja, hast du in der Vergangenheit schon mal irgendwelche medizinischen Websites benutzt?

P18: Ja.

I: Welche Art von Seite?

P18: So Symptomseiten.

I: Also eher so Informationsseiten. Und kannst du dich noch daran erinnern, welche das waren?

P18: Ja, und zwar... Ich weiß nicht mehr, wie die heißt. Omnamed oder so was.

I: Onmeda vielleicht?

P18: Onmeda, genau. Kommt glaube ich auch bei den Suchmaschinen immer als erstes. Und ich hab mir aber auch schon, also zum Beispiel, als ich am Knie operiert worden bin, hab ich mir auch Sachen von Kliniken angeguckt.

I: Also die klinikeigene Website? Oder Vergleichsportale?

P18: Nee, nicht von der Klinik selbst, sondern solche, die sagen zum Beispiel: „Wir haben uns auf Knie spezialisiert“ und da tatsächlich eine Abhandlung. Also es gibt tatsächlich Ärzte die auf ihrer Website darüber informieren, was da gemacht wird und so was. Ja genau, das habe ich mir auch angeguckt.

I: Und wie hast du entschieden, welche Seiten im speziellen benutzt? Oder bist du da einfach über Google gegangen und hast die ersten genommen? Oder hattest du schon Empfehlungen oder irgendeinen anderen Weg, wie du darauf gekommen bist?

P18: Ja, ich benutze immer Google. Aber ich benutze nicht das erste, sondern ich klicke meistens mehrere Sachen durch und entscheide dann so ein bisschen nach Seriosität. Also wenn ich das Gefühl habe, da darf eigentlich jeder gerade so ein bisschen was reinschreiben, also zum Beispiel in so einem Forum, wo dann jede Frau schreiben darf: „Oh ja, diese Schmerzen habe ich auch immer“. Dann ist das nicht so meine Website. Aber wenn dann die Experten Gynekologen dazu eine Meinung abgeben dürfen oder wenn es eindeutig ist, dass eine Meinung auch schnell kommt.. Ich schreibe da mein Problem hin und dann kommt der Rat da irgendwie 10 Minuten später. Aber wenn ich dann online sehe, der hat dann 3 Tage später geantwortet, dann wäre das nicht die Website, die ich benutzen würde.

I: Ja, und die Seiten, die du verwendet hast, fandst du die vertrauenswürdig?

P18: Nee! Nee. Weil, ich hab das Gefühl, wenn ich auf einer Klinikwebsite oder einer Arztwebsite direkt gucke, dann ist es nicht ganz neutral. Dann schreiben die Ärzte immer: „Wir bekommen das hin und unsere Methode ist die beste“. Das ist halt ziemlich undifferenziert finde ich. Und dann habe ich immer das Gefühl bei diesen ganzen sehr offenen Angeboten, dass da halt wie gesagt auch viele Leute viel schreiben können. Und wenn ich Kopfschmerzen google, dann hab ich immer das Gefühl, da kommt eigentlich das schlimmste raus, was es sein kann. Ich würde nicht sagen, dass ich damit gute Erfahrungen

gemacht habe. Oder manchmal kommt auch zu viel raus. Also dann google ich irgendwas...

I: Informationsüberflutung quasi.

P18: Genau, Überflutung was es alles sein könnte. Und dann weiß ich aber immer noch nicht, wie jetzt mein Problem speziell behandelt werden sollte.

I: Ja, das waren auch die Fragen dazu. Jetzt habe ich noch ein paar Frage zu demographischen Daten. Wie alt bist du?

P18: 26.

I: Und was für eine Ausbildung hast du?

P18: Na, noch habe ich keinen Master. Also den Bachelor Abschluss.

I: Und was ist deine aktuelle Beschäftigung?

P18: Ich bin Masterstudentin in der Bildungswissenschaft.

I: Und wie häufig benutzt du das Internet?

P18: JEDEN Tag. Mehrere Stunden. (lacht)

I: Also wenn du noch irgendwelche Gedanken oder so hast, die du noch hinzufügen willst...

P18: Ja, ich bin da voll, ich hab ja ständig irgendwas. Das heißt so medizinische Websites finde ich eigentlich voll interessant. Also wenn es da ein gutes Angebot gibt, dann wäre ich da auf jeden Fall dabei. Ich benutze auch online Apotheken. Also ich bin da auch Kundin von dem Service auf jeden Fall.

I: Ah, und wie war mit denen die Erfahrung bis jetzt?

P18: Gut. Also manchmal war die Lieferzeit ein bisschen... Also hat mich dann genervt. War zu lang. Aber es war auch nie so dringend. Ich hab halt immer nur rezeptfreie Sachen da bestellt.

I: Und war da mal irgendwas, das du nicht vertrauenswürdig fandst? Eine Apotheke, wo du sagen würdest, da würde ich nicht...

P18: Nee, nichts.

I: Gut, dann mache ich das mal aus.

## Sample Transcripts Expert Interviews

### Expert 4

Name of audio file: Interview E4

Duration of audio file: 00:56:23

Place and date of recording: 30/04/2015, Berlin

Remarks: in English

Date of transcription: 25/06/15

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I: Okay? #00:00:04-0#

E4: Yeah. #00:00:04-8#

I: So, I've have explained the project. Maybe first, you could start with explaining what's your position in the company? #00:00:14-5#

E4: Okay. So, I work as the UX designer here. In our team/ in our product team, there's me, there's Fred. He is the UI guy, and then we have, like, a project/ a product manager. And then Ieva/ I don't know if you've been on the Website/ she is the CPO. So, she kind of manages the whole product team and anything that/ like, has final say in the actual product/ like, the actual Website and service that we're providing. For me, as the UX designer, how we work is that specifically, I would look/ like, whenever we have a solution for something, like a big change to the Website. So, recently, for example, we've just decided to change the model in which we/ and how we handle the patients and clinics. Because, traditionally, how it happened is that we facilitated for some of the clinics and then some of the clinics/ the actual clinics would have their own, like, international facilitator. So, the patients with Internet would either connect with/ depending on which clinic they inquire to, they will connect directly with the clinic or they will connect with our facilitator. It's kind of a bit confusing. And so we've decided to change that whole model. And now we're going to facilitate every clinic. And then that way we have more ownership over communication. And we have, like, more of like look over and be able to contain the quality because as I said, the quality of the communication and the information being provided because sometimes English is not their first language. And in some cases, we have a lot of French people as well. So, there's a lot of miscommunication. So, I kind of, like, handle that whole process. And so that's a big change. And so me, for example, as a UX person, I've been helping from a more/ like, collecting lots of/ doing lots of desk research, seeing how that could work, trying to understand what all the use cases are. #00:02:06-4# And then I've just been collecting lots of examples from sites like payment pages, service type pages. So, what/ yeah. What I do is I look at all the desk research in like more high-level stuff. And then we'll create some wireframes based on that. And like, knowing what all the fields that we need to all the content that we need on these pages are. And then I pass it on to Fred, our UI guy, who will then kind of make it look nice and add the right interactions. And, I mean, generally, that's how it works. And/ but there is a lot/ I mean, on the surface, we're in a start-up. Like, there is a lot of overlap between me and the

UI guys. So, sometimes, like, we'll be doing things simultaneously and on the same thing. And then we'll be passing it back and forth between us. So, it's not so defined. I mean, that's something that we're trying to work on as a team to try and have some sort of process in place because, I mean, up until I joined, it was just the UI guy who did everything. And so now, I've come in. And now we're still, like, figuring out how the work flow should be like with me involved as well. #00:03:12-9#

I: Yeah. But the main customers, as you said, the patients, right? #00:03:18-2#

E4: The patients and the clinics. #00:03:19-1#

I: And the clinics, you would/ I mean, you would just get them onboard in some other way but not by/ through the Website? #00:03:23-3#

E4: Yeah. Yeah, not through the Website. So, at the minute, I mean, I'm quite predominant as patients are our customers. I mean, yes, we have to work/ deal with the clinics. But that's/ I mean, it's different. Yeah. A different process. There is also as part of why I've been doing is also collecting/ doing a lot of user research because I think up until now or at least up until I joined, they had a/ they'd done a lot of customer research. But like, market research because it's a start-up. And so, I mean, there's nothing. We don't have any patients or customers, yet. So, you are just doing what's based on the market. And then you're kind of creating some personas around that. But then since we've now been able to/ we've taken nearly 200/ like, more than 200 bookings, so I was dealing/ once I got here was actually calling up all these patients, understanding why they chose C4, how they found us, what their/ you know, what their barrier is, and opportunity/ the model out there. And then creating personas around them and understanding who our customers are. So, yeah. That's kind of what we do. #00:04:38-3#

I: And how many years of experience do you have in that field or on the job? #00:04:42-6#

E4: Four years. So, before this, I working at a/ in London. I was working at a service design consultancy. I mean, typically, when I was doing that, it was working on lots of projects, often for no more than a month. It was a lot of/ the first three years I was doing it, it was all just as a UX researcher. So, I was conducting a lot of user testing, focus groups. Yeah, just all the different research practices that you have, and then feeding back recommendations to the clients. And so actually, that meant that I a very small, like, involvement in the project because often, especially with companies that would hire service design consultancies come in, they are, like, big, multi-nationals. And they're backwards. And they're trying to update their/ I don't know/ insurance check-out process sorter. So, I would be testing a very limited section of the Website rather than looking at the Website as a whole. And then feeding it back just to that product's team. So, it's different, actually, working on this stuff that now I'm being, like, in-house and getting/ #00:05:56-1#

I: More/ #00:05:56-3#

E4: involved in/ yeah. Yeah, and you're just more involved in everything, kind of as a knock on/ you realize you're more aware of what the knock-on effect is when something changes here because you can see, like, the bigger picture. Yeah. #00:06:12-0#



I: Maybe now we can start talking about the actual topic about the trusted designs of. Now, you can explain a general approach to design, like which is more/ I mean, do you call yourself a designer, actually, or just a user researcher more? #00:06:29-5#

E4: I always said the UX designer. Yeah, I guess. (Laughs) #00:06:34-6#

I: So, yeah, but the general approach to design, how would you go about/ #00:06:38-0#

E4: So, I mean, before I start even putting anything to paper, typically, I would do research. So, I mean, what I've been working on now/ this new payments pages that we're trying to implement and service plan pages. So, I've just been collecting. I've got/ we use DragIt. I don't know if you/ it's a tool that we use. And it's just for, like, screen captures. And it links to the Website. So, I've just been using that and just collecting loads and loads of, like, best practices of payment pages and service plan pages. And just/ yeah, collecting altogether. Ieva and Vera, the product managers, have been doing more of the technical research in terms of, like, understanding exactly what kind of information needs to go into the pages and then feeding that back to me because I can then I can/ because obviously that will need to go to the page. So, yeah. I would always start with research. And then I would/ and I start mocking it up. Like/ and I know, like some people like to keep, like, with the wireframes, just having the boxes, like, having it black and white and everything. And I do that, but actually, I think it's hard to get a good feel of the page because you add the color/ like, the layout and everything that's nice about it. So, you have to look at the hierarchy of text in the page. And that does kind of affect the overall look and feel of the page. So, actually, the designs I take before I pass on to the UI guy is already quite high fidelity. And then he'll kind of go over and, I mean, I will need, like, critique and criticize and will have feedback and everything. So, that's cool. I mean, it works. They are/ I mean, that's/ yeah, research and then seeking (unclear #00:08:27-6# ). It's kind of like in/ #00:08:28-8#

I: Yeah. Okay. And are there any design principles that you are using? #00:08:35-0#

E4: For me, I think, we have/ we are trying to create a style guide at the minute to make sure there's consistency across the site. The problem is because it's been/ because everything on the site is new, there is/ there hasn't been any, like, clear template for this is what the page should look like or this is what header one and header two (unclear #00:08:59-1# ) because, like, everything is just, like/ it's kind of grown, in some ways, a bit organically. So, what I'm really trying to do is sort of bring some sort of consistency to the site. So, Fred has been working in this, actually, and creating style guides, which, I mean, by all/ by no means is a fixed document. Like it is/ it should be a living document that is going to be changing and everything. But, yeah, having clear, good templates for each of the pages, which we don't have but we do need, and then having a clear hierarchy of, like, content on the page is important. And then I think other design principles would be/ I don't know. #00:09:47-1#

I: It's fine. #00:09:48-2#

E4: You get spacing. And yeah, just making sure the page flow is right, you know? And yeah. Okay, so, I think I like/ I just think. I just do it. (Laughs) #00:10:01-9#

I: And now regarding trust, so the way how I try to see trust is that there is, on one hand, the user bringing trust and how you can evaluate that, and then on the other side, what a

trustworthy Website looks like. Maybe you can talk a bit about your/ the definitions of those two. #00:10:23-1#

E4: It's weird because what I've found with users, especially, is what they associate with trust is not necessarily what is the most trustworthy Website. You can put/ I mean, we have, like, the whole SSL, like, certified badge stuck here. And we have verified and everything. And we say/ and we have a little padlock icon. And special things like that, and especially on the payments page, is sufficient to, like, bring across trust. And it's crazy, actually, how much people do trust these Websites, I think. And it surprises me. They/ I think because people are so used to entering a lot of information online now that actually a medical Website versus an e-commerce Website, that level of trust is almost the same. And I wouldn't say that a user coming to our site is looking for or expecting anything to look, I don't know, more trustworthy than if they were buying a pair of shoes online. And actually, for me, I think my understanding of the users is that if the site looks good, they are more inclined to trust it than a site that's out of date. So, the aesthetics of the site actually come into it. And a site that works as it should do and has as few errors as possible, so, like, kind of instills trust in the user as well. And I think/ so, I mean, that comes all back to usability. And so having good Web usability is one of the main ones for trust, I'd say, actually. #00:12:13-3#

I: Yeah. And it's actually, one of my next questions. Well, what is the difference between trust and usability because over and over again, when I was reading about it, the description is so similar. So, how do you create trust, and how do you create usability, knowing the usability of the difference? #00:12:27-4#

E4: To me, I think/ for me, it goes hand-in-hand. I mean, from a technical perspective, it doesn't. But I think from the user's perspective, if a site works, is incredibly usable, they are/ they will trust it. And if/ the minute it lacks that usability, that's when they're going to start doubting the Website and lose the trust in it. So, I think it's/ I think that is one of the main/ like, one of the biggest things that we're/ like, we have to make sure it's usable because the minute you add any sort of frustration or, you know, it's broken in some way, then you lose their trust. So, good UX and good usability is so important. I was going to raise another point but I forgot. #00:13:11-3#

I: And as a Website or a Website provider, how do you evaluate whether the user is trusting you or not? #00:13:20-5#

E4: It's hard because I think not being on the other side, like we could at least/ we only see the inquiries once the user has actually interacted with us. And it's also different/ it's difficult to track something like that because I don't/ yeah. I'm trying to think how we would track where/ how trust/ I mean, from the feedback that I've got speaking to a lot of the users/ and we've got through, at least, like, they trusted us. And that/ #00:13:53-5#

I: (unclear, overlap) studies all in/ #00:13:56-2#

E4: In the patients that we were calling who I/ #00:13:58-4#

I: (unclear, overlap) #00:13:58-8#

E4: These are patients who actually booked through us. And I think, I mean, the fact that they booked first mean that they obviously trust us. So, they already/ so, I mean, like, the results from that is going to be biased because they are kind of/ I think it's a medical travel and they obviously already have booked through us and know that it's trustworthy and everything. But/ which is actually part of my next project is I'm starting/ I will be starting this evening to start contacting patients who didn't book through us. So, maybe they contacted us but never ended up booking with us in the end. I mean, that's the only way that we can get in touch with people who have seen our Website. And yeah, so I'm/ that's going to be another project, trying to understand why they didn't. But from what I understood is that actually, the reason they booked with us over any of the other sites that do exist on the market is because our site did look more trustworthy. It looks more professional. It looks cleaner. It's very clear. It was very kind of/ it was usable. It was here's how it functioned. And I think on our Website, we really do try to/ because we understand that trust in the/ for particularly when it comes to healthcare and your own personal health, is going to be the number one, like, thing that resonates with you. And that's going to be so important to you. That/ yeah. So, we've really tried to get that/ send / keep that message or have that portrayed on our Websites, that this/ you can trust us. So, like, if you look on our clinic details page, we have little things like, "This clinic has been verified by us," like, trying to add personal touches to make it look that/ and, you know, make it like all the Web/ all the clinics on there, it's not like the clinics haven't/ can't apply and upload their own thing on there. Like, we have them personally curated and chosen, kind of like hand-picked these clinics to be on our Website because we want to make sure that it's/ to, like, ensure that quality is maintained. And/ #00:16:08-8#

I: Also, so it sounds a bit like to ensure that there is a real person involved, right?  
#00:16:14-5#

E4: Yeah. #00:16:15-0#

I: So, you put a person in touch and you say, you know, it's not just the clinics uploading something. You're actually showing there is somebody at C4 who is/ #00:16:22-7#

E4: Yeah. #00:16:23-2#

I: / qualified. #00:16:24-0#

E4: Exactly. Exactly. I mean, where now every time we send out an email, we want to try and attach one of our customer care support teams, like, maybe an image on it. I mean, that hasn't happened, yet. But this is in the future just to give it that touch of personalization and gives it/ it's not just this digital interface with no human emotion attached to/ like, behind it. Yeah. And, I mean, also one of the main reasons/ and it was because what we're trying to advocate is, like, price transparency. So, we have all the prices of all the treatments on our Website. And so we're trying to make not just our Website more trustworthy but also the clinics and just change that/ the whole medical industry as a whole and make it look, like, more open, and more transparent, and clearer. And that's something worth trying to bring to the patients. #00:17:17-9#

I: So, it's kind of empowering for/ #00:17:19-5#

E4: Yeah. #00:17:19-9#

I: / the patient, right? #00:17:20-4#

E4: Yeah. Exactly. #00:17:21-8#

I: To make more informed decisions. #00:17:22-9#

E4: Mhm (affirmative). Exactly. And I think because we have all that information and it's available for everyone to use for free and we've kind of/ we've gone through a lot of work to gather all this information and to put onto our Website. And so to have all of that information for free, freely available to the patient, it's, like, an incredibly powerful tool. And I think at least ones who book through us, they kind of recognize that that was, like, something that is very beneficial to them and that we are trying to do something good for them. Yeah. So/ #00:18:02-1#

I: And have you ever tried Google Analytics or, I mean, other page tracking things? #00:18:08-2#

E4: Yes. #00:18:08-6#

I: Do you find that they're/ that they say something about trust, or not so much? #00:18:13-2#

E4: How would we measure trust in Google Analytics? I'm trying to think. I think it's hard to measure trust on those sites because it's not something that you can/ I mean, we haven't/ we don't really do very much A/B testing because we haven't got enough traffic to A/B test anything. So, it's not like we could test, like, oh, this page with this icon versus this page without it, like, does it/ is there more traffic or are there more conversions. No, I'd say I don't know. #00:18:50-8#

I: And especially with conversions, it's probably difficult, right because I guess you/ #00:18:54-5#

E4: Yeah. #00:18:54-5#

I: / you have, like/ #00:18:55-1#

E4: It's a much long/ #00:18:56-5#

I: / a few, but, like, bigger customers, right? #00:18:58-3#

E4: Yeah, exactly. And we've had, like I said, like 200/ we've had, like, thousands of inquiries. But in terms of, like, total bookings, like, maybe we're at 300. I don't know. But, yeah. So, it's kind of hard to know. #00:19:13-1#

I: Yeah. And with the usability studies that you mentioned earlier, do you think that those are insightful for trust? #00:19:20-7#

E4: So, we've done/ I haven't done any usability studies. I am doing one next week. But up until now, it's/ #00:19:28-0#

I: Apart from the/ #00:19:29-9#

E4: Oh. #00:19:29-9#

I: / previous jobs, are you generally feeling about usability studies and trust? #00:19:33-5#

E4: Yeah. Yeah, I mean, I think/ I mean, that's one of the questions that we ask in every usability study is, like, I mean, there is a whole list that you always ask, like how trustworthy does the site look to you. Would you/ because, I mean, if it's not trustworthy, that's when you lose the users. So, it's/ so on any Website. And I think it's not just, like, all the rules of trust and security applies to not just medical Websites but to any Website that you use anymore/ any Website where you're entering your personal information into it or, yeah, creating an account. That's/ it's always good to have. You want to be able to convey that sense of trust. #00:20:15-0#

I: Yeah. Okay. Let me see. And to what extent is the healthcare industry different when it comes to trust on the Internet? #00:20:26-8#

E4: I think it's been to ask a little/ well, we don't ask, actually, about much more information than that. So, the only place that/ in the inquiry form, we ask for what medical procedure you're looking for and then, like, a little comments field of, you know, a bit more description. But actually, it's surprising, like, how I haven't noticed any real difference. I'm trying to think if there is a use case where/ like a particular patient. Like, it's been surprising how willing patients are to share. And even when I was calling back the patients that have booked for us, I was always a bit/ because you know, now you're discussing a medical procedure that they have done in the past. And there's always that doctor/patient confidentiality. So, I was/ unless we have all the information about their treatment, I didn't/ like, I don't want/ I/ no. I'm technically, I mean, the Website knows. But yes, I'd always just approach it from very, like, "Hi. I heard you booked in a treatment with so-and-so at the blah, blah clinic in December. How was it?" But, like, it's crazy how open they are and how much they are willing to share. And I don't know if it's because they just trust us as a company. And I don't know. I'm trying to think. #00:22:00-1#

I: It could be that they might just generally be a bit naive and not/ #00:22:04-0#

E4: Yeah. #00:22:04-8#

I: / skeptical about/ #00:22:05-9#

E4: Yeah. #00:22:06-8#

I: / companies. And, I guess, could just be/ #00:22:09-8#

E4: Yeah, maybe. I think, yeah, maybe they are (unclear). #00:22:15-5#

I: And do you think that age has an influence on people's willingness to trust? #00:22:22-7#

E4: Yes, a hundred percent. So, I think I could, like, ferry back to the naivety. Generally, people who are less tech-savvy are going to be more naive. And actually, I think actually I'm more willing to share more than some/ okay, well, like some of the younger/ not younger, but like, the 20, the 30 to/ like, mid 20s to 40 year-old bracket who, I think because recently security has been such a big topic with Bespoke and all the sharing waivers and all data. I think actually that makes people a little bit more hesitant to provide information. But we've/ I mean, in our inquiry form, we've tried to keep it, like, as minimal as possible in terms of the information we ask of them. So, we don't ask for, like, any of/ we don't know if they're male or female. We don't know when their birth date is. We don't know, like, where they're located, sometimes, unless they provide. They have to provide a phone number because our (unclear #00:23:29-0# ) has to call them up and that's the only way we can kind of track where they're from. But otherwise, like, actually, we try/ because what we found was, you know, obviously, with any, the more fields you add, the drop-off rate is kind of/ it's yeah. You can see it. So, I also think, like, once all of that is was the younger age groups are going to be less trustworthy of sites and more skeptical, like, more skeptical. We have noticed this, like, ourselves because we/ like the information we ask of them actually is so minimal that it's/ yeah. They don't need to get super personal. And actually, most of the personal information exchange is between the clinic and the patient. And we've had patients where they have inquired about a certain procedure and have requested then to not want to deal with our facilitators or want to speak directly to the doctors. And then so in that case, we would connect them and then they would handle all of that separately because, I mean, most/ we work at, like, the start of the process. So we're just kind of connecting them. And after that, they can start that discussion and/ #00:24:45-9#

I: A facilitator with you? #00:24:48-2#

E4: Yeah, a facilitator or the doc/ it depends on the procedure. But with coming up with the treatment plan, like, the doctor will always have to have/ like, a facilitator can't come up with a treatment. He is going to have to consult with the doctor or the dentist about what's best for the patient. So, in those cases, it's fine. But, I mean, with the/ they're interaction with us, like, it's/ yeah, it's totally fine. #00:25:12-7#

I: Okay. Now, I have a couple of items. They're for myself. They might be for interview for trust. So, I'm just going to go through them, and then maybe you can share your view of them and if you have any experiences. So, the first one is structure and how structure influences trust. So, structure on the Website, so I mean, I'm wanting, like, what comes first, what comes next, and then the flow of the Website. #00:25:40-1#

E4: Well, for me, I think it needs/ well, any page that you go into, it has to be immediate. You compare what the intent of that page is. So, having good headline texts, having/ well, what we're also trying to do is have, like/ have a very, like, alternative way/ be more conversational and be, like, where you're/ have it more comforting/ more like a mom that is looking after/ like, a nurse, I guess, looking after their patient, or a mother hen. And so that's/ and yeah, that's structure. That/ I guess it comes into, like the tone of voice of content that we bring across. But structure is important. Having a good page flow is so important. Knowing, understanding how the peak user is going to be reading all the content on that page. And because some of our pages are super long, because we go into/ some of our clinic pages has all the lists of procedures and treatments, and specialties. So, you'll have, like, up to a dozen different specialties, whether it's in, like, orthopedics to

dentistry, to, like, we've assisted reproduction, cardiology, blah, blah, blah. And then within that, we'll have, like, all the different procedures. And then we have information on those procedures as well and the prices. So, yeah, having good page structure is important. Otherwise, you just get lost on this page, as it just keeps growing. #00:27:07-2#

I: Yeah. Okay. Yeah, the next is social cue design, and a couple of different items. One is photos and video clips, synchronize and asynchronize, communication, virtual agents, and then affiliation with celebrities and so on. So I mean, we'll just start with photos and video clips. #00:27:30-3#

E4: Okay. How do we/ how do I feel about those? #00:27:32-9#

I: Yeah. Your feelings and about any experiences. #00:27:35-4#

E4: We have one video on our Website. That's on our home page. And it kind of/ it shows how C4 works. And I think it's very good in capturing that. But I/ generally, I personally stay away from videos. I think that's just my/ I mean, maybe it's just a personal preference. I think for certain procedures, for images, for example, we use that a lot for all our clinic pages. And I think that's such a powerful thing to/ because we're trying to bring patient empowerment to the users. And part of that is showing them the clinics and so they know what to expect. And from feedback from the users, that's, like, one of the reasons that they chose us. And we've hired photographers specifically to go out to all these clinics to take photos so that there is consistency across all the clinics as well. And so we've put a lot of effort into making each/ and we've created the content for the clinic information, like details and everything. That's really powerful. We've also got procedure pages where, again, we use imagery for/ well, just to demonstrate often how procedures work. And I think, actually, in some of these cases, videos might be suitable. But I generally stay away from videos unless it's necessary. I don't/ and also, yeah. Just/ it just makes/ and we have a lot of mobile users. More and more people are starting to use stuff on their phones. Often, when they're using it on their phone, it's going to be on the go and when they're out and about. And so having video content kind of requires the user to be sat down to consume, like, with less distraction and everything around them. #00:29:24-4#

I: And so social cues, so what do you think about people on the photos, about/ for example, would you rather have, like, the actual doctor or something a bit more neat and professional, or/ but the social part of the photos is what I'm interested in. #00:29:41-7#

E4: Yeah. #00:29:45-1#

I: Do you use them at all? #00:29:46-6#

E4: Like, we/ I mean, we/ the only photos we have of people are on our home page. And they're kind of/ we had a photo shoot and they're, like, supposed to represent the patients. If you look at a lot of other medical Websites, they are, like, photos of the doctors and their nurses. And I think we, like, considered going down that route, but we decided to go/ I don't know. I think we just kind of decided not to. But, I mean, I have nothing against either one. And I don't/ #00:30:20-8#

I: And will you think about whether it's important for patient trust? Do you think it plays a role or not so much? #00:30:26-5#

E4: I think the minute they start looking more like stock photos, though, like, even if it's/ whether it's a doctor or a patient and it does look too stocky, that's when we kind of start losing the trust. Yeah. So, I think that's more important, whether/ than whether it's actually a doctor or not. And, I mean, there are so many, like, subtle things that could change a photo of a human. Like how they're standing and how they're looking at you could, like/ the social cues from that, you know, there are so many variables. Or, like, whether they're facing you forward, whether their arms are crossed, or they're open, or/ yeah. And so/ #00:31:12-1#

I: And the next is communication. So for example, having the hotline on the Website or on live chats and things like that, what's your view around that? #00:31:22-7#

E4: For us, we have our numbers everywhere because we have the care team and we're very/ we can push our care team a lot because I think they're doing a great service and they're giving very personalized services to the patients. So, for us, it's we have, like, a number at the top. And although it's, like, an international number, and whenever we/ and on the inquiry form, like, I mean, it comes/ it goes straight to the care team. And we have, like, yeah, someone answering it. And I think especially for healthcare, like, people don't want to just be sent to a generic form that will get/ because it just feels like it's going to get lost somewhere. You want some/ like, so many people want to be able to speak to someone immediately. And they'd much rather have a conversation about it because especially when it's something so personal to you, you kind of want to know that someone else is actually listening to your case and hearing what you have to say rather than just sending an email to them. Because I know a lot of Websites, you really struggle to find a number on them and they really push, like, email, or connections, or whatever. So/ but for us, like, that's not the case. And we/ yeah. I think from/ generally, if we had, like, a help section, it's the number first and then, like, the customer care, the email address, and everything. So, I think for medicine, it's/ having a number is, like, so powerful. #00:32:51-3#

I: And what do you think about these/ the team pages. Does that have an impact on trust or not so much? #00:32:57-3#

E4: Team pages, like, as in our About Us page? #00:33:00-7#

I: Yeah, exactly. #00:33:01-4#

E4: So, our About Us page, I think it is/ it hasn't/ we haven't changed it since we've launched. But it's because there's so many other things to focus on. But yeah, for sure. I think we need it because if they're going to be trusting us, they want to we're a professional network. They want to deal with also a professional company that will/ that they know they can trust and that they know is going to be providing a quality service to them. So, yeah. I think the About Us, particularly for a new company, particularly for a start-up, like, that's the only/ they're not going to have heard about us anywhere else unless their friend used us. But that's really unlikely right now. So, this is/ that's the only thing that they can go on to make a judgment on us. And from what I understand, most people do visit the About Us pages when they first come to our Website. And they do read through the sections. I don't know. That's what I think. #00:34:02-2#



I: Okay. Yeah, the next part is content. So at least first talk about the certificates and things like that because you already mentioned it earlier and that you think people don't really/  
#00:34:16-1#

E4: I think you can/ you have them on the page. And there's, like, SSL ways to send the message, like this is an encrypted page. This is a, like, secure deck we have certified. It's verified and everything. And we show it on there. And I don't know how much the users take in. But I think something of SSL is just a small part and that's enough to instill that sense of trust. And since I've been collecting and looking at just doing a lot of desk research, like, the level at which some of these Websites show that trust varies so much. And some are, like, so minimal but are still, like, very big companies, or like, you know, in the digital space. And people are entering their credit card details. And I mean, it really must work. Like, people don't (unclear). #00:35:11-7#

I: And do you think when the people on the computers really know which one is which and which one actually shows something? #00:35:20-4#

E4: I don't think they know. #00:35:21-6#

I: Because, I mean, I guess there is somewhere/ I mean, you'll get in serious trouble when you just fake it. And I guess there's some other things where/ #00:35:28-1#

E4: Yeah. #00:35:28-3#

I: / you just draw some/ #00:35:30-4#

E4: (unclear) are and say, "Oh, yeah. It's/." Yeah. That is true. But I think that comes back to a lot of users being very ignorant. Like, you hear so many people, like, who have signed their life away by checking the T&Cs, like, you know, the box. I mean, it's just like they just/ they would look at the overall look and feel the page. And then if/ and make a judgment, or like, (unclear #00:35:53-9# ) is trusted. And so, yeah, you can add all the badges, and we do add because we want to/ we are a trustworthy site. We want them to know that. But I think how much they pay attention to it, I'm not sure. But I'm sure it's in some way/ #00:36:12-5#

I: And what do you think about brand promoting information, like the logo and everything that's related around MEDICO itself? Does that play a big role, or is it more for, you know, companies that already have bigger branding? #00:36:26-2#

E4: So we're/ how we use that/ #00:36:29-0#

I: Like, what do you/ yeah. Like, how often are you using the brand name where you're putting the logos on the Website and on everything related? #00:36:36-2#

E4: I mean, it's/ I'm trying to think how we/ I mean, because we're new so we're trying to push our brand at every opportunity that we can, so we have the C4 Care Team. And then we have the C4/ like, I think, even now, when we have (unclear #00:37:01-7# ), we're trying to, like, have a spin-off with our name and logo. But I wouldn't say any more than most companies, if we're using it in any other way. But yeah. #00:37:17-1#

I: Okay. Yeah, and what do you think about affiliation with well-known institutions or syndicates and things like that. Does that play a role? #00:37:28-0#

E4: Yeah. I think it's so important. And one of the biggest things, particularly for healthcare and for us, I think the strongest means of getting new customers is through building trust and through word of mouth. And so, yeah, the strongest thing. So, for all our patients who come to assess, they haven't heard of C4 before. But what made them choose C4 Travel because I think C4 Travel in itself is quite a new concept. And so they have all heard about it from a friend who has gone on a medical trip and who has/ could recommend, and in a lot of the cases, they had them recommend the clinic. And we happen to have that clinic on the Website, and that's how they kind of communicated. That's how they used our platform was maybe they're/ not always because they were looking for, like/ I mean, they didn't/ wouldn't have known about us unless they started Googling. And they all/ all or many all of them happen to find us by chance. So, it's/ yeah. So, word of mouth is super important. And/ I'm sorry. What was the question again? It's/ #00:38:39-6#

I: Yeah. What about institutions or professional/ #00:38:42-6#

E4: Yeah. So/ #00:38:43-3#

I: (unclear) the clinics, right? #00:38:46-6#

E4: Yeah. So, having some sort of affiliation with a larger, more recognized company, or whatever, would give us that much more reach. And, yeah, if it's a bigger trusted company, then for sure. It gives us that much more kind of legitimacy about us. So, we've been recently/ even just, like, trying to partner with other companies and say, you know, that we've partnered with Lufthansa and partnered with KLM. That gives them/ they're like, "Oh, okay. So, you guys, like/" They also immediately trust us. And our/ because they're like, "Well, if these big guys trust them and they're doing good service, then we should trust them as well? Like, why shouldn't we if they must have done research?" And I think that kind of filters down to the users as well. #00:39:37-6#

I: And what about something on a mission statement on the Website? #00:39:44-3#

E4: What about our mission statement? #00:39:48-7#

I: A mission statement/ so, this mission statement, is that/ does it make the Website more trustworthy or not? Do people never look at mission statements or they're not interested? #00:39:58-5#

E4: I think, for me, a mission statement, yes, some people look at it. But I think, actually, it's more important for internal perspective. I'm not sure I know/ I don't think from any/ of all the patients that I interviewed, like, no one brought up the fact that why they chose this was because we had a really/ they really liked our mission statement or they really liked what we advocated. Like, it was always just more from a self/ how did it/ how is it convenient for them. And how did it work for them rather than/ so, for me, I mean, it's important because I think that kind of filters through the entire company, and how the company works, and how they treat the customers. But that's more an internal thing than for the outside user. #00:40:51-5#

I: Okay. And then what about graphic design just overall, and what do you think about the most important factor is for trustworthiness? #00:41:03-3#

E4: For trusting? #00:41:04-5#

I: You should talk about some, like, you know, high-quality photos and/ I mean, one thing that, as a add-on, you were colors. But I'm not sure of/ #00:41:14-1#

E4: Yeah. I think/ yeah. We have a lot of blue. It's very/ I mean, it's/ #00:41:21-1#

I: I think most of the/ #00:41:21-6#

E4: / MEDICO/ #00:41:22-4#

I: / Websites/ #00:41:22-8#

E4: / always blue. That is interesting because we use red as our main port actually for our buttons, which, when I first got here, I wasn't sure how I felt about it because I knew red to me is like emergency, or error, or whatever. But I think now that I've/ but because of this, I've been more aware of where red has been used. And actually, it's surprising that, I mean, Google uses it a lot for/ in their email area. And I think in the past, it always, like, you know, was a big no-no. Like, don't use red anywhere, unless/ like, in any form unless it's, like, for errors because that's going to/ yeah. I mean, this was even, like, three years ago. It was, like, a big usability, like, no-no. But somehow, it's, like, changed. (Laughs)  
#00:42:13-9#

I: (Laughs) They've updated the books and everything. #00:42:16-4#

E4: Yeah. Yeah, and people don't associate it so much with errors. And yeah. And something bad. #00:42:25-2#

I: Yeah. And then I was also interested in some Website external aspects. I'm not sure if you/ how much you're involved in that kind of stuff. But with your social media and the importance of being present on Facebook or LinkedIn or other Websites. #00:42:42-4#

E4: I don't/ #00:42:44-0#

I: Or Twitter. #00:42:44-1#

E4: I don't manage our social side. But I know we are trying to push it. And/ but I think there's, like, good ways and bad ways to do it. And you want to make sure you're following the right people, I mean, because I said that you're/ that's one of the main things/ like, that's the brand of the business. So, no, I mean, I think any public channel where any customer is interacting with you, it's going to be important. And at the minute, the kind of content that we push on there, I'm more/ on Twitter, we don't use it. We're not heavy enough. We're starting a new but, like we have pushed that in the next couple of weeks. So, this is new for us. But, I mean, in the past, it's been Tweeting just interesting articles on medical tourism and what doctors have had to say about it as well. So, it hasn't been so much a channel for pushing C4 as a company but more, like, pushing medical tourism as an industry. On Facebook, we use it more to kind of push the brand. But we have kind of like a more fun

way of interacting with the audience than we do on our Website. So, we have, like, fun, like quizzes on there like, which body part are you. And, like, how well do you know your/ how good is your eyesight. Like, you know, so health-related quizzes. And integrate kind of pushing/ but also kind of pushing C4 as a brand. So, whenever/ where our successes have been and, you know, if we've been in the press or anything. So, one of the ways we kind of push it. But yeah. I don't/ I haven't actually/ and I guess there's a way you have to push it in promotions on/ as well. So we'd go out through that channel. #00:44:47-3#

I: What else I have here/ social media. Another part is search engine optimization that I guess also is not really your field, right? #00:45:00-4#

E4: No, not so much. (Laughs) #00:45:02-3#

I: All things really, then user feedback and, I mean, you can have user feedback in so many ways, I guess. You can have it on the Website, or there's, I think, like, eKomi, where it's kind of outside, but you can have, like/ #00:45:18-0#

E4: So, we have a widget that sits inside the little chat window that comes up. And you can click on it to give feedback. I mean, the chat also connects directly with the care team so they can have the live chat with them if they have any questions. But there's also the option to just give general feedback about the Website, which, actually, since it's been there, no one has uses. And the only people we ever used it to kind of communicate with the chat team and the care team. So, in terms of getting/ I don't know. Like, I really having the pop-ups on the Website when you come on. And I know a lot of Websites do do it. Like, you know, after three visits, they'll/ or every third visit, it will come on as a layover or whatever, which is something we, like, thought about but we just haven't implemented, yet, because it would be nice to get more feedback. But yeah. I mean, but it's also annoying for the user as well. So, it's kind of like a double-edged sword. But yeah, I mean, on the Website, that's the only way from what I know that we can collect feedback. From the users, when I've been calling them, all of them, we have/ I mean, I always ask at the end of the conversation if they were willing to participate in any future studies. And, you know, even if it meant when we have a idea or design that I could run it past them and do some sort of remote usability testing with them. And I don't know if it's because I was on the phone and me kind of putting them on the spot, but I'd say nearly all of them except for one or two all agreed to help out and were happy to sign up and give feedback, you know, when I needed to. So, that was good. But I think, as soon as you face it, and that way you're like, "Well, wait a minute. And we're still learning. And you really need to help us." And they're like, "Of course. You guys are doing an amazing thing" and all super positive, which has been really nice. #00:47:32-3#

I: Yeah. That's nice. And after talk about all this from the user perspective, what do you think of the aspects that do actually show whether a Website is trustworthy or not? Like, you know, things that they can't really fake or that only, you know, a real company can do, like, you know if you're not as blind, and maybe it's the users, they would really say it's really good. #00:47:58-8#

E4: What we do to make sure that actually is a trust. #00:48:02-1#

I: No, more like, not just about C4 but, in general, when you go to a Website, what really shows whether the Website is trustworthy or not because, you know, all things would/ I

mean, now we have been talking about, like, what do users think that makes the Website trustworthy? #00:48:18-5#

E4: Yeah, yeah, yeah. I think that's actually more of a technical question that I'm able to answer. But I know, like, he can/ and I don't know what the exact terms are. But when you do/ well, we have to SSL and security vouch. But actually that means that you're getting it sent through a server. And so on the actual browser window, when you look at the address, like it's the padlocked sign within the bar that tells you that it's secure. But I'm trying to think what other cues there are to indicate that it is genuinely safe. I don't know. #00:49:00-3#

I: Yeah, just for me, on the widget, explain a bit more when coming from just my thought and also the investment literatures and happy about how expensive a Website is because there's been a lot of investment. I mean, only a real company can do that. So, for example, if you have/ or if a trained person/ like, if you have a live chat or hotline, then chances are higher the Website is a real and professional Website because you/ #00:49:28-5#

E4: Oh. #00:49:29-0#

I: / you can call, and there's actually somebody there, right? #00:49:31-4#

E4: // There's someone.// Okay. #00:49:31-6#

I: So, I was thinking about these things and if (you have some idea?) about that. I mean, this, as an early thing, is probably/ #00:49:38-5#

E4: Yeah, yeah. I'm trying to think. #00:49:40-8#

I: Would you think that would/ do you spend, like, really most effort on, or what do you invest most on the Website? #00:49:48-2#

E4: Right. On our Website right now, it's/ well, I think because the care team are the ones who deal with all the customers at the end of the day, so yeah. Things that ought to show/ well, there's things like, let's say, for example, I know calling on the customer, you would change the/ we're using Zendesk, which is/ they can deal with our patients. And so, depending on what a patient is looking to, we can change the number for the/ to make it relevant to the different countries. If you're calling the U.K., you can choose to call from a U.K. number. Calling America, you can choose to call from a U.S. number. And actually, when we're calling Thailand, we'll call from a Thai number. And so, I think for a patient when they see that they're/ and so it will come up on their phone that indicates it's a U.K. number calling, it makes it more trustworthy rather than this, like, weird international number that I don't recognize. So, we do change that. I mean, actually, for our end, it doesn't change anything/ the number that's being displayed on their caller ID. So, I think there's, like, little things like that that we can do. But, I mean, that's again from the more of the design side rather than the actual technical side. And then/ yeah. #00:51:15-3#

I: Who's/ yeah. What I'm kind of interested in is, does/ also if it's mentioned that people are looking for something that's really a good indicator. And like you said, like the certificates, maybe they are not a very good indicator because we don't know enough about it. #00:51:28-3#

E4: Yeah. #00:51:28-8#

I: And also you're working on what could be things that actually make sense for people to look for? #00:51:33-5#

E4: Okay. #00:51:34-5#

I: Yeah. But, I mean, it's fine if you're/ #00:51:37-1#

E4: (Laughs) No. That's a really good question. I haven't thought about it, like, that way around. I haven't thought about it that way around because I think, for users, generally, just they don't think about it that way. They're like, you know, well, that's fine. #00:51:54-7#

I: Because it's mostly unconscious, right? #00:51:58-1#

E4: Yeah. #00:51:58-5#

I: I mean, they go on the Website, and they just feel whether it feels trustworthy or not? #00:52:02-7#

E4: Mhm (affirmative). What should they look for? I don't know. It's kind/ it's hard to be/ I mean, we can show them all of the things. But they're not going to know if it's true or not until they actually use it. But, I mean, yeah. Having, for us, at least one, too, because, to make/ have some sort of consistency with a lot of patient communication, you always make sure that the same care team, I mean, for example, is it's always the team in the same nation. And so it's funny because you know when I was calling them, there was one person/ I think they would save us as Joe from the C4 team. And so, like, I call, and I was like, "Hi." And she's like, "Hey, Joe." And I'm like, "I'm not Joe." And she was like, "Oh." (Laughs). And I was like, "No, but I work for C4." And she was like, "Oh." (Laughs). And so, yeah. They treat us as a person, you know. That's something that was cool. #00:53:07-7#

I: Yeah. I think that's all of my questions. I don't know if you have anything that came to your mind whilst we were talking that you want to add or any questions, or anything else. #00:53:17-4#

E4: Like, I mean, what kind of other companies are you speaking to, or who/ #00:53:24-2#

I: So, officially, I can't talk about the names. #00:53:28-9#

E4: Oh, yeah, yeah. Right. #00:53:30-4#

I: But it's/ we're look to many kind of portals and more/ it's kind of online diagnosis, you know, like advice or second opinion companies. #00:53:42-4#

E4: Okay. #00:53:43-0#

I: Also, we really like the pharmaceutical, medical/ what do you call it? They use/ those are the/ they're sending medicine. #00:53:54-7#

E4: Yeah. #00:53:55-4#

I: So, like, a different variety, and also foreign providers, so a mix. But they're all with some sort of health orders. #00:54:05-2#

E4: Yeah. Now I'm trying to think if there's anything. I think actually, well, one of the things that is important for us and for trust or security is, like, our account area because they're afraid they're sharing very personal information because they're sharing medical records, and they're sharing, like, these X-ray scans, and then exchanging treatment documents. So, on our/ they/ so, they would upload it onto our Website. And then the doctors would collect it or whatever on the account area. And we have a very secure platform for that. We/ I can't even access that. It's for/ it's just for them to do. And I'm trying to think how we've ensured/ I'm trying to think because it is secure. But I don't know how we/ other than how we show that that section in particular is more secure than any other part of our Website. And I'd/ like, there isn't. Like, I'm trying to think. But actually, there isn't. #00:55:14-0#

I: It shows how hard it is for users, right? #00:55:15-8#

E4: Yeah. #00:55:16-2#

I: I think even companies that really know how to show that it is trustworthy. #00:55:21-3#

E4: Yeah. Yeah, I know. I mean, I think because they just assume it is that as the designer, we haven't had/ we'd be trusted anyway. I mean, I guess once they belong to any account, they assume that they're in the more secure part of the Website because this is not available. Like, it's not what the public sees. And so it's/ yeah. It kind of feels safer once they're in that domain. But yeah, like/ but actually, from a design perspective, there's nothing really that we've added to it to make it look like it/ any different on the Website. Interesting. (Laughs) #00:56:07-2#

I: Well, thanks so much for your time. I think this/ I'm done with it. #00:56:13-1#

E4: Okay. #00:56:14-1#

## Expert 9

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I: Ok, maybe we first talk about your previous experience and how you got to this job. Maybe you can talk a bit about what kind of education you got and what other companies you have worked for.

E9: There are not that many actually, we are a very young team all of us. I did Industrial Design Engineering as a Bachelor for 4 years – officially 3 year bachelor - and then Strategic Product Design, which is basically looking at what are the strategic parts that you also need to actually design a product pretty well. And during that obviously... I started studying in 2007 and since then the entire smartphone thing came et cetera. And I think that in my studies that is not really a big theme actually, but on the other hand, being able to do the design process as they have been doing it for four years, like on products, knowing that and taking that to the digital market is I think something that just makes sense. And I feel that it works right now. So then I started... Like I finished my Masters a little over a year ago. I did my graduation internship also here.

I: Here as in at C9 or in Berlin?

E9: Here in Berlin. But then I worked at XXX Internet, which is like the Venture Capital or the seed investor of C9. And I worked together with C9 as well as two other companies as well to look at like how a venture firm can use design methodology to teach their startups so that the startups create better products basically.

I: Ah ok. So basically like a course that they delivered to their startups?

E9: Yes, I developed some workshops and taught them some tools et cetera that they could use to understand their customers better et cetera. And exactly one year ago, I started here at C9 and as a user experience designer officially. Back then we had one other designer like graphical designer. Before that I already worked on the product itself. And totally in the beginning they hired a design agency for the first version basically of the product.

I: A design what?

E9: A design agency. And now the team is 3 people. So now we have another girl who is here like for 6 months temporarily and then see who else we can get to work with us.

I: And then were you involved both in the development of the website and the app or mainly the app?



E9: Mainly the app actually. During my internship at XXX, I did like the very first version of the C9 website or maybe the second version. The website that's now out there, I have not been involved that much with. It's actually downstairs, it's Goodbadge, a design firm originally from Tokyo and they did the website. As I said, it's more like a front page. It is not our product at all actually.

I: And what kind of tasks are you involved in? I mean how far into the programming do you go? Or is it pure design? Or what is your exact task?

E9: Like for me personally, I don't do any programming basically. Like the website, I would be able to do some things, but for the design... I'm much more on the conceptual side, the user research is basically the focus that I have. And then construct the user experience basically. Then Louis, he is more the visual designer, who actually... We both do it, but he is more on the visual part and looks a bit at programming to make some prototypes sometime. But otherwise we have another 3 developers who do the iOS development mostly. And then we have engineers who do the song processing, which the hearing app doesn't do that much, but we have now another product.

I: And what is your general approach when you have a new project or a new task? How do you approach that?

E9: I mean like I said, I really like the... I have been classically trained in product design. That also means that I take this more design thinking approach. Like, I don't know if you're familiar with it the methodology.

I: Yeah.

E9: And actually for my graduation internship I tried to look at both the design thinking as well as the lean startup methodology. Which some companies use. And basically the way how the one... I mean they are both very iterative, but the design thinking, what I like about it is you have... Like in the beginning you're more in this fuzzy front end as they want to call it and you do more research and you try to understand: What is really the problem that we are trying to solve here? Rather than get a product out as soon as possible. Now, on the other hand, we did recently a music player which basically uses hearing aid algorithms to make your music sound better. Especially if you have some loss of hearing. But because there is always this pressure to have a product out as quickly as possible, we basically said: Let's do a first version to show that it is technically possible. That people like it on the sound-level. And right now we're doing really more on the conceptual level. Like what could the user experience look like? Which means that we started with some user research, we did some expert interviews – like people who do things with sound or visualisation. Let's see, what else do we do... I mean right now we're looking for concepts of how can people personalise the sound of the app. We already did like midgets, that is an other approach that we tried around efficient product design. You consider: what is the future economic life for the next 5-10 years and what is then the interaction that we want people to have with the product on a more general level. And only then we start building features. So in general, we try this converging and diverging several times after each other, on different abstraction levels basically.

I: Ok. Now, let's talk a bit about trust itself. So what's your... When you think about trust in your product, how would you define trust and what are the most important features?

E9: I mean trust is definitely the biggest challenge for us obviously. I mean it is actually funny, because we have this hearing app where trust is really important. But now we have this music player, where we try to think how can we position it in such a way that it is actually not that much of a medical product. So there it becomes less of an issue. On the other hand, we still have the issue where we say that the sound sounds better, but do people actually trust that? I mean even if they hear it, they can still say: I don't believe it. But for the hearing tests, trust is one of the topics, that we still want to do more research on. It is really important to us and we add like small little details throughout the app that give people this feeling of trust and that reinsure them for example the calibration is right. Because if they might actually worry if what we put down there is actually true.

I: So it is mainly the trust in the result? That they believe: Hey what they tell me about my hearing is true? Because that is the main feature? Because your app is for free. So it is not that much about payment data?

E9: No. I mean especially in Germany the whole privacy issue is definitely a big thing as well.

I: You mean personal data?

E9: Yes and it is also health data. If we combine personal data with health data, it becomes a difficult subject. I mean we really separate those. We have two different data bases for that. But yeah, it is always difficult. Because on the other hand, we would also like to know how does somebody who has bad hearing compare to somebody who does not have bad hearing. And like being able to compare that...

I: Like linking demographics to your results?

E9: Yes. You could basically do anonymised demographics, which is standardised. Then it's ok. But the line between when it is personal data and when not is difficult. I mean pretty well defined by law, but...

I: But it also depends on your dataset, right? Because if you only have let's say 100 users and you take 3 points of data, like age, where they live and something else, then it becomes obvious who is who.

E9: Yes. On the other hand, I mean it is not like I know when somebody is from, I don't know, Wuppertal, that I know who it is. But yes, that is definitely an issue. Also making a profile would be very valuable for us, because then we would have the email address and we would know a little bit more about who the user is. But we have tried making that mandatory before you could actually see the results, but then people complain about that, especially in Germany. I mean I can totally understand why. So now we made that optional and we are playing around a lot with that as well.

I: But then how do you try to find out where is the limit? Is it trial and error or did you do interviews with user around that topic as well?

E9: Good question. I am not sure if we... Like we did a larger research project, where we also went to the States to actually talk to several people around various topics around the hearing test.

I: Users in that case? Or experts?

E9: No, yeah. Potential users, potential users. So they were not users yet, but they could have been if they would have known about it in general. And I mean we identified the topic of trust as like a separate thing and we have talked about it, but we haven't really gone very deeply on that. Although we could have. Also why do you find with these privacy issues that I have talked about before, a lot of people are... When we see reviews and the feedback that we get, they seem to trust us pretty well. I mean people compare it to what happens at the doctor's office et cetera. And I don't know, it doesn't seem like a big issue for us to spend even more time with it.

I: So it doesn't look like there is something wrong with the website or the app that needs to be fixed, is that what you mean?

E9: Yes. We would need that indication before we would do much more research on that. But again, that is also... Like if we would do a new project, like a really new app, then it might become an issue. It might be a topic. But if you are just doing improvements, like iterations, as long as it seems fine, I would say it is good. Still there is like making an account and making that part of it where we wonder is it ok or not. But that's not as important.

I: Ok and one thing that came up in other interviews was that people often kind of talked about trust as if usability equals trust. So I would like to hear your view on to what extent are usability and trust connected or different.

E9: I mean that is definitely connected. I think people, when they see something, they immediately have of course a gut reaction: Do you trust it or not? Which is partly also: What does it look like design-wise? Is it designed nicely or not? Which colours do you use has an impact on that. And usability is very important, which also means that it does what you expect it to do and there are no weird things in there. And basically...

(short interruption, because the participant gets a phone message)

E9: Yes, so in that sense I think usability and trust are definitely directly related. Because I think if you would increase usability, I don't know if you would also increase trust. But if you decrease usability, you would definitely decrease trust in that. Although I don't know whether that is mostly a personal view or if that is something that is actually true for everybody.

I: Ok. Yeah, how do you explore whether or not the website or the app seems trustworthy? I mean you mentioned that you get feedback from people, but do you think that, I don't know, Google analytics studies or usability studies would be a good indicator to measure it?

E9: I mean in that sense we have similar things, not google analytics. So we can specifically see: Did somebody leave the app? Where did they do it? What did they do,

what didn't they do? So I think what we did play around with is different, like setting up different things and see the way it would do. Like for example the headphone selection and adding like this copy that we calibrated for this specific headphones et cetera. And then one of the main things that we actually look at is like do people then finish the hearing test. Like are more of them finishing the hearing test. Which is obviously the goal. I don't know if you can definitely say that it also means that more of them trust it. Not sure. But like a lot of this micro-copy is there to reassure people that it is ok and that it is calibrated and that we have thought about all those things. And I think that qualitatively you see that then in reviews and quantitatively you see that better usage or better completion rates.

I: So when you say that you show that you have thought about it, in a way it is also about displaying your experience, right? I'm just trying to make sense of...

E9: Sure, I mean. Yeah. Like sort of we show that we have, that we know what we're talking about. I definitely think that this is also part of it. That people say: "Ah, they actually talk about the noise in the room. They talk about the headphones." And those are like the main variables that we actually have and then reaction time and we also mention something around that. I mean that is a bit more difficult to see, but yeah. And then we have two different tasks. Like the second one it doesn't even depend on reaction time. So I think by not only designing the test in a way that works, but also reiterating that throughout the app, I guess that also adds to the trust that people have. That basically all the questions that they had about it, we answer them. The only question that we don't answer is: What do I do now? Now that I have bad results. But that is also because we cannot really do that as a non-medical company.

I: Ah, because of therapy recommendations?

E9: Yes, because then we are diagnosing and then we need FDA approval or CE certification here in Germany.

I: Ah yes. Do you, when talking about these approvals, do you think they play a role? Do people pay attention whether it is there or not?

E9: I think again, like this time it is not a detractor, but it could improve. Like if it is there, people like that. And obviously we can do a lot more. If we have approval, then we can actually say: "You have bad hearing issues, you should do something about it. You should see a doctor." The only thing we can say now is: "If you feel that your results are bad, then you should consider going to a medical specialist". And I think that would definitely increase the user experience. Where even now, we shouldn't really mention that there this kind of hearing loss. We just say that "your hearing looks like this". Because "hearing loss" already makes a medical product and makes it that we are diagnosing. And I think that is specifically something that now decreases the trust in the app. Because we have to be sort of vague in important parts of the app.

I: So it decreases the quality or the information quality is suffering, because you don't have the approval?

E9: Yes.

I: Ok. And do you... Apart from these FDA approvals, are there any seals or awards that play a role in your field?

E9: For users?

I: Yes, that users look for. Like for e-shops they have this trusted-e-shop kind of thing. Would you say there is anything comparable?

E9: In Europe you have this CE, but that is also a certification. I mean the other thing that would be interesting for us is when we actually have approval or can work together with health insurance agencies. And we are working on that obviously. But otherwise – not that I am aware of.

I: Ok. So basically there would be some sort of transfer of trust if people trust in the insurance and you work with them?

E9: Sure. And obviously it can save them money. Where it's just more convenient, when you don't have to go to an otologist and you can just use the app and that's ok with the health insurance. In that sense, what we are solving is not necessarily that we give better results or more trustworthy results, but we do get better like... I mean you can just do it at home. Interestingly though, there was research done that people who self-administer tests, so they do it themselves, they are more likely to actually get a hearing aid later than people who get tested by somebody like an otologist.

I: Oh, that is interesting. I mean that would make ME ask the question: Do they trust in the app more, or the self-administered test, more than in what the doctor says? That would be a bit counter-intuitive, right?

E9: Yes, but I don't know We talked with this guy in the United States and he was like: "I don't know. Who do I trust more? The doctor or Google? I guess actually google." I mean, but I do understand. The doctor is also just a being of one and with Google, you can do more research and get more into it and then I mean you can sort of play them against each other, but I think there is a lot of power in letting people or giving people the control themselves, but also making sure that cannot cheat it. Which is basically at least what we are trying to do. In that sense...

I: For me, the other question would also be... I mean that sort of study, did they also look at how pro-active people are? Because if a person does a self-administered test, it shows also that they are interested in their own health a bit more. Whereas if the doctor just says you should do it, maybe you're just not that interested.

E9: Sure. I mean, I don't know. And I'm not sure if that test was basically just that they had 20 participants in each group and then one basically said: "Let's do something" and the other group not. I think it was more like they would all go to the doctor's office and like some people would be doing it themselves - like use a computer programme to do it themselves – and the other half was actually going through the traditional...

I: Ok, interesting. What do you think are the main ways to win the users' trust? Like would you say it is more about design or is it more about everything around, like the app store or how many users you already have... What would you say is the most important?

E9: I think different parts are important at different levels. If we are talking for example about just downloading the app, which is like the first stage obviously. Reviews are super important. Rating is important. Like how high is the rating on average – where we are very fortunate. We have a rating of 4.6, so that is fine. Then they will download it and they will obviously take some of the trust already with them. Then there is a lot on this first screen. What permissions do you want to ask? And if you ask for a permission and people don't give it, then you can never get it anymore. And there is of course gut feeling from what does the app look like, what colours do we use... And then in the different steps, I think especially this reassuring sentences and reassuring visuals are quite important. I mean like in the... For our results for example, that is a good question, do people trust it because it looks a little bit more designed or would they trust it when it looks like the way it does at the otologist? Like more scientific. Although they might not understand then, they might like it. But I think we have a good combination of both. We have this hearing age, which is very relatable, which people still don't understand. Because they have a gut feeling for it, but they don't really know what it means and that makes it again very difficult of course. And then the other ones, some of the results are more difficult, but I don't think that is a problem actually. People who do understand won't get a lot of information from it. So yes, we have different levels how you talk to people. What the app looks like, what the overall experience is like obviously. Whether other people recommend it, whether Apple recommends it. Because that makes it mostly easier to find it rather than having to look for it. Yeah. PR can help obviously. A lot of people recommend it and we might try that.

I: And do you think there is a clear relationship between investment in design and trust? You know, the fancier or the more user studies you do or whatever, that really makes a difference? Or in other words, does a website have to be costly to be trustworthy?

E9: (laughs) I don't think it needs to be costly. I mean, a website is already a bit different.

I: Or the app. Because I always have “website” as my keyword here...

E9: Ok, but I think it is an interesting distinction. Because I mean, a website can be... For example, our website I think is fine. Not that much investment in design or in trustworthy design. Which could definitely help in the end. I do believe there are potential users who go to the site and see like: What is this company? Can I trust them? But, I mean just making a website that generally looks good is not that much investment necessarily. But in an app, you really want that. And with design, I mean more the user experience than I mean the visuals. In an app you really want to invest in that. Because again, if it is shit, then people won't even use it. Then it doesn't even matter if they trust you or not. But it is not necessarily a money versus quality thing. I think it is more an approach thing than it is necessarily an investment in design. Like you could invest a lot of money into visual design and still not understand what people are looking for in an app and, therefore, have a bad user experience.

I: So basically the concept matters, is that right?

E9: Yeah. I think first the problem's definition and then your solution for that on a conceptual or experience level. That is like the main thing. And if that resonates with people, then the exact application of how you design it is not even that important, because it will naturally flow from what you have understood before.

I: Ok. Do you think, if we talk about the type of user that you have, do you think that age has an impact on the willingness to trust?

E9: Mmh (pause). Yes, but I mean... I wouldn't actually know. We haven't actually figured that out from our interviews for example. I think like older people will be more quickly having hearing age which is more similar to my age, but it doesn't necessarily mean that they hear good. So, I think young people might trust a little bit less, like 20, 21... Because it's not something that they are doing anyway. They are not interested in the topic in general. But, I don't know. Like thinking logically about it, I would say that young people trust smartphone apps and iPhone apps maybe easier, because they are more used to actually using that, but I'm not sure that actually applies to us. But that would be something that is interesting to research. But we haven't done that yet.

I: And are you... In which countries can you get C9? Everywhere?

E9: Yes, everywhere.

I: Ok. I was just thinking, because sometimes you have all these approvals and then you are limited to some countries. But if you don't even...

E9: No, no.

I: Yes, that doesn't matter. But the question is actually whether you think that culture has an impact on willingness to trust or what people are looking for in an app.

E9: Definitely. And I think that is one of the things... We have been translating the app since summer and that has for example helped us a lot in Japan. Where obviously a translation helps a lot already to create more trust. China also helped a lot. But I think that you could even do a lot more in that sense. For example, Japan. We did a workshop downstairs where they really have more of these characters. These characters which are then really important, this helps more in those countries.

I: Like a playful design?

E9: Yes. I think we still are a little bit in between anyways. That is even why it works in Japan relatively well. In the US it is different. I mean Germany for example, you can really see this with this privacy issue. It is like completely different than any other country.

I: Really?

E9: Yes. Like when we had the signup, I mean obviously we get more downloads in Germany than in the Netherlands or France, that is because we are a German company. But like in Germany, people would actually complain and we got several 1-star reviews because of that.

I: Because you asked for too much data?

E9: What we did was we had then was this quick 5-minute test and then we asked for you to create a profile based on your name. I mean we didn't ask for real name, we just asked

for nickname, email, country. And that was like... I mean what they were mostly angry about was that we asked that before you can see the results. Because that is sort of... And we removed that as quickly as possible. But we wanted to try to see how many people would actually sign up. But in the US it was basically ok, 75% of the people signed up and nobody complained. And I think that there is a big difference there. Maybe in the US they don't care as much about it, whatever. I mean it is only your email address.

I: Now a few more more detailed questions on different elements. So the first is around structure and to what extent structure influences trust. I mean structure as in navigation and stuff like that.

E9: In a way that again influences the user experience and it then definitely helps. When people can find the right bars, like for example for us, if they wouldn't find the detailed results or if they wouldn't find the accuracy information, then that would definitely decrease the trust that they had. What for us is important, we have this onboarding setup where you can go through the different steps. Like what I said before, the headphones and the noise et cetera. I think that definitely, putting that before the test definitely increases trust a lot. So for example before, we had this noise monitor, which checked whether there is not too much noise in the surrounding. And we only showed that when there was too much noise. So when it was quiet enough, we wouldn't show it. But then we figured that if we showed it always, then people would actually know that we take care about this. Like think about it. And I think that for example is a structural part really improves the trust in the end in the app.

I: The other thing is social cues. Social cues as in... That could for example be "our team" page or something like a phone number or anything that has to do with "there is a person behind the app". Do you think that plays a role? Or is it not that important?

E9: That is interesting. I mean for... I have the idea that for websites that makes more sense. For an app? Well, why not. So in our communication, we obviously try to make that personal as well. We are thinking of... Well we are using illustrations right now.

I: You mean communication as in the text in the app or emails as well?

E9: What I meant was the emails. The text in the app, I mean we obviously try to be personal, but it is not like we say "Hi" on each and every page. We had this concept where we would ask for your name and we would introduce ourselves et cetera. But we figured in the end it was a bit lengthy and it would take too much time, so we didn't put it in at that point, but we might at some point in the future. I think it definitely helps, because of a personal connection. Also I don't know if it is necessarily something that evokes medical trust, but it will definitely make the app seem more human and might even put it a bit away from the traditional medical sphere towards the more human lifestyle health connection. Which is definitely what we would like to be associated more with, rather than traditional medicine.

I: So basically trust in your company as such and not just purely trust in the information. The belief that you are a nice organisation so to say?



E9: Yes, sure. And yeah, with the... I think moving forward in design we would like to put more pictures of people et cetera. So that is not necessarily showing them that we are behind it, but that it is a human product.

I: In other ways... How do people get in touch with you? I mean in apps you normally don't have chats as such, right? Like how do they communicate with you in general?

E9: We have... Like what we ask is... We have a popup which asks if they like the app. And if they say yes, then we ask them to rate it. And if they say: "Could be better". Then we ask them to give us feedback. And they can obviously email us. That are the main ways they could get in touch with us basically. If we want to get in touch with them, we sometimes do surveys in the app. So we ask a few questions. We had a survey where we ask: "How do you feel about the results?" That was interesting.

I: How do you think does it influence the trust? I mean the kind of communications you basically have with them?

E9: I mean it is not on a very big level, right. So we only talk to, especially as in a human does it, we talk to maybe between 0.1 % and 0.5 % of the people and I guess those people we try to help as much... Because those are obviously also the people who are not not sure about the results or what something means. So for them that helps. If that helps for the general feeling of trust? I don't think so. But that is just because it is not visible to other people.

I: So it is not highlighted as in: "You can talk to us", but it is mainly through using the app?

E9: Yes, true. But it is definitely an interesting topic. Because if we want to be more like this health thing, where we replace otologists, then this whole "can people actually talk to us" or "can they have a conversation with us" would be a topic. What we did have in the app is where you would be able to leave your phone number to have a call with a hearing specialist, but nobody was interested in that.

I: Ok. Fair enough.

E9: I don't know. There are still people in the company who go like: We should just implement it differently. But if we had now 150.000 hearing test takers and NOBODY signed up for that, or maybe 2 people, then maybe it is just not relevant...

I: Yeah.

E9: Yeah, people they don't trust us enough in that sense. Which is also... I think there is a very strong trust element, but we are not exploring that so much anymore. And right now our other app is more important with the music.

I: So it's not the main focus in a way.

E9: No.

I: Let me check how much time we spent already. I just have a few more questions. Yeah, in terms of content, I mean we kind of talked about the quality of... Wait give me one second. I need to figure whether this one is already answered.

E9: Sure.

I: Ah yeah, another topic is brand promoting information. Like... It's a bit around this thing of "C9 as a company". So how important do you think it is that you brand yourself? And I mean that could be like using the logo a lot or the name and stuff like that.

E9: I think that is very important. Especially in our space, where it is very stigmatised and people don't like hearing aids and people think that people who have hearing loss speak weird and it's all... Like most people, when they get hearing loss, they rather ignore it than do something about it. Even taking a test. So getting away from this old stuffy industry is very important to us. Because otherwise we don't have that connection with the people we need to eventually address. So there is a very big gap between the people who do have hearing loss and never do something about it... There is like a lot of space there. In that sense our brand is really what we try to, like inform any design decisions. If we have an app design that speaks to the brand that we have and forces those values into the app, then it's good. If it doesn't do it that much, then it's not that good of a app design basically. So in that sense our brand is very important for us and the other apps that are out there are way more old school. Also targeted to older people. And for me, I still believe that older people don't want anything that is targeted to old people. They want something that is targeted to young people.

I: (laughs) Here's a question that doesn't really apply for an app... Is there any like affiliation with well known institutions or professors or something like that maybe?

E9: Yes, we have a collaboration with Charité University Clinic here. And we are doing a research project with them as well.

I: Does that matter? Do you think people pay attention?

E9: I don't know.

I: Or how do you even talk about it? Is it mentioned in the app? Or only on the website.

E9: I think, until recently, we couldn't really mention it on the app. We do have like the professor of course. He's in our advisory board. I think it is mostly on partnerships where it is important. I think it could be important to people as well, but we don't really have the chance to be able to really express that that much. When you're in the app store, you are looking at the app and then you just download it. You can see the Dutch one. (pulling out his phone) This is what you have. The icon. Normally it says here 5 stars and people will get the reviews before they download it. And you have the description. And we could of course here add something about Charité blah blah. But I think people wouldn't really read it that much. And it is also the question like who do you want to target. I think for some people it might help and they will trust it more, but are those the most interesting people for us? Maybe yes, but probably right now no. We just need a lot of people to download it and preferably do something afterwards. And right now, the thing they can do afterwards with us is like change the way they listen to their music, so they can listen more healthy

basically. And people who are really interested in whether we have some organisation behind it, the target group is not that much I would say.

I: Ok, and at some point you already mentioned colours as an impactful thing. Can you maybe be a bit more concrete? Is it that only a particular colour should be used in that setting? I don't know, medical colours? Or something else?

E9: That is definitely a big topic here. Which colours are we going to use? Like we have 4 brand colour. A dark blue, a light blue, a green and a pink. Like salmon pink sort of. And there is definitely thought behind that. In the hearing test we use green, but that is also more about the legacy. We have been using green for 2 years now basically, so now it is still the green. I mean like the thing is that colour, in my understanding, really helps to make the design look good and highlight things. But it shouldn't be very overwhelming. And what we do try, although we use green, you might say which is a bit medical and some people do associate that with it, but that's not too bad. I mean it is just like friendly that part of green. It is...

I: At the friendly end of green. (laughs)

E9: It is such a difficult and... There is no exact science to it. You have these charts which you can buy at a souvenir shop. Blue is, I don't know, trust and calmness or whatever.

I: Yeah, and red is passion. (both laugh)

E9: I mean there are definitely things to it, but more because we associate those things with it. And I think for me it is more like that colour is more part of the design and in that sense makes it an important element, but only in service in how that looks in total.

I: Ok. So far, there are no photos in the app, right?

E9: No. We are probably adding... There might be one now. But... It's like we're at this... But we're mainly using illustrations. Yeah.

I: And you are not so much into marketing and that kind of stuff, right? Because I also have questions on social media, but I suppose...

E9: I have been doing that as well, but...

I: But would you say that is an important thing for an app like C9? Or is it more...

E9: It can be a very important thing. We were actually talking about it yesterday with the marketing girl. Like what we have been focussing on was mainly getting as many downloads as possible. While I think it would be way more interesting to actually focus on creating a community of people who like our product and who care about their hearing and who care about their music. And obviously social media is very instrumental to that. And especially with our new app, with the music app, I think it's going to be more important in the near future and we have to see how can we built that into the player as well. We need to see how can we make the player social rather than just using Twitter and Facebook and Instagram to just spread the work. Which is a very basic way of doing that social media thing. And the only thing that we did do from the beginning is that you can share your

hearing age and that... I think there were few people in Europe and few people in the US who did that, but a lot of people in Japan.

I: Another interesting cultural aspect, right? Another thing is, if you put yourself into the position of the user and you think about which things are actually meaningful regarding the trustworthiness of a provider. Like what is a reliable sign of “oh, I can trust that company”?

E9: I mean; I think I mentioned this before. If I would use something and actually some of the questions that I have are being answered while I’m going through it or there is a big reassurance of certain elements... Than obviously whether it looks good or not. A website or app that looks like it was designed 20 years ago, I wouldn’t trust that much. The company itself, like the name. Like for example if you have a Siemens hearing test, I can imagine that somepeople trust that more readily, just because of the name.

I: But do you think that that is actually reliable? So in the sense does it mean that because it is Siemens it is better? Or more... So I am not just interested in how do people do it, but more in is it a good strategy to evaluate trustworthiness? Like what you said about that the company thought about it, that makes sense. Because it REALLY shows something. But something like having a name... Ok, maybe if it is Siemens, at least you know it is a real company. But some quality indicators like some approvals, like is there really a hard fact that shows you: I can trust that company? I think for app companies, but that is more general than for medical companies, it is really like user reviews and ratings are super important. Where it definitely helps that we have almost like 5 stars.

I: Because you can’t really fake that one, right?

E9: Exactly. I mean you can obviously do some things. Like we have implemented this strategy that people who like it don’t actually give feedback, but get to rate the app. Which obviously helps. Otherwise like people are obviously in control of themselves.

I: I think that helps. Like reliability on the app itself. Like also what I mentioned before. Like reliability when you have very different result in your first test than in the second test, that would be weird and that doesn’t help. But we actually had people commenting on this as well, where it was like some people said they tried it a few times and the results were the same and some people said it was completely different. And some people look more at the hearing age, which I said can vary a lot. But if you look at the audiograms itself, then it doesn’t vary that much. But I think also this human connection, being able to talk to the people behind it, that would be a good strategy.

I: If you actually talk to an expert and he gives you feedback.

E9: Yeah, on the other hand people apparently weren’t interested.

I: Bad luck for them. Ok, I think that is pretty much it with my questions. Yeah. I don’t know. Do you have anything else? Do you have any other things in mind that we didn’t discuss that came to your mind?

E9: I mean the only thing that for me and I think we did discuss this actually, but for me the beginning is so much more important than the tactics in the end. If the strategy that you

have is something where you are solving somebody's problem and that will really influence whether the tactics also work. And the tactics can maybe get you from 5% to 6%, but they cannot get you from 5% to 20% so to say. Yeah. I think that is something I try to make people here realise more and more. But that is a continuous struggle.

I: Ok, then thanks for the interview.