NTNU
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Inclusive Service Design: Current practices and future recommendations

A contribution to ensuring Service Design
methodology is flexible, sensitive and
adaptable to wide user groups.

Oda Lintho Bue

Abstract

The field of service design as a design discipline experience growing attention and development. The design methodology does not have a clear definition yet, but is increasingly involved in many aspects of our society, from developing new services, re-designing exciting ones, or to investigate work environments. Norway is a leading country when it comes to the use of service design in public sector, as well as digitalization in society. Requirements for universal design are embedded in laws and regulations in Norway, while the inclusion of universal design aspects in service design is under-researched.

This thesis aims to increase the awareness and knowledge regarding universal design expertise in service design methodology. An exploratory and qualitative approach has been used to gather information through a literature and interview study. This thesis focus on the following areas within universal design in service design metholodgy: method usage, process and approach, mention of focus on universal design and which users that are included, and if there is any mention or focus on universal design in projects.

The finding in the study are discussed and are background for suggestions to how universal design aspects can be embedded in the field of service design.

Keywords: Universal design, service design, user-centered design, user involvement, method, approach, process, design.

Preface

This Master thesis is the final thesis for a part-time master's program in Interaction design at NTNU Gjøvik. The aspiration to write about universal design and service design have arisen through the work with other courses in the master's program where these themes have intrigued my curiosity. On basis of the finding, it has been concluded that the field lack research, and I hope that this is one of many studies regarding this topic.

I would like to thank everyone that has participated in the interview study, and those who have provided me with guidance.

A special thanks to Eirik who have been supportive and positive, and supported me by taking biggest part for the care of our children when I haven't been able. The same goes to my parents and parents in law who have been very helpful in so many ways.

Christian and Elsa, my beloved children that have made sure that my thoughts and focus have gotten some rest from the study.

Family and friends that has supported, encouraged and believed in me, thank you!

Last, but not least, my supervisor Miriam. Thank you for guidance, support and advice. Your expertise on research, and in the field of universal design has been a great motivation and encouragement. I also appreciate that we have been able to meet in person and work together. Working with this thesis have been lonely sometimes, and I appreciate that you also have been a friend and colleague through the process.

Jessheim. December 15, 2017
Oda Lintho Bue

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1. Introduction

Today, about 70% of the value creation in Norway is in the service sector (Tveit & Universitetet for miljø- og biovitenskap, 2011). Service design is a fast-growing design discipline(Sullivan & Rosenzweig, 2015) and service designers are increasingly involved in both private, public and business service creation, as well as governmental service administration and digitalization(Kuk & Janssen, 2013; Steen, Manschot, & Koning, 2011). The essence of service design is the holistic design of digital and physical touchpoints as well as intangible aspects of a service, together forming a costumer journey and a service experience. Public and private sectors increasingly offer digitalized services to the public, as specified in the increased Digital Economy and Society Index (DESI) (DESI, 2017b). As products and services are becoming more integrated and complex, service designers seem to hold an important role due to the holistic approach of the discipline. The service design discipline is thus considered likely to have a strong impact on the shape and form of future eCommerce and eGovernment services(Scott, Delone, & Golden, 2016).

Norway is ranked as number one on digital evolution in The Digital Planet 2017 (Chakravorti, 2017), and the Norwegian government seems increasingly aware of the socio-economical and democratic need for ensuring all citizens are capable of utilizing these services, as evident by the strengthened legislations related to universal design (Barne og Likestillingsdepertementet, 2016). Service design methodology is acknowledged as contributing to making user-friendly solutions ensuring positive user experiences. The users are commonly included in the design process, and many designers include the users as co-creators (Schneider, Stickdorn, Bisset, Andrews, & Lawrence, 2012). However, focus on marginalized user groups is uncommon in the literature. Further, universal design is not a topic of discussion in the field related to best practices(Bue, 2016).

A Survey from SSB (Bø, 2016) shows that, in Norway, there are 87 000 disabled that are unemployed, but who wants to work. Currently, both public sector and private businesses that target the public offering ICT-based solutions to the Norwegian public are obligated to ensure that these are universally designed (Det kongelige barne- og likestillingsdepartement, 2009). Thus, it seems universal design in the context of service design is currently under-researched and there are no clear recommendations or initiatives to promote universal design in the discipline. The seeming lack of focus on universal design in service design research is

considered detrimental to ensuring professional best practices results in inclusive services. It is considered beneficial for service design methodology to better support the needs of marginalized user groups. To ensure that these user groups can continue to live independent lives and part-take in social, democratic and workplace scenarios. It is further considered a potential threat to a cost-effective implementation of the current legislation on universal design, as the whole user journey across service touchpoints must be usable for all – not only the digital touchpoints across the service chain. It is not viewed as unlikely that future Norwegian legislations will mote specifically mention service journeys, to supplement current sectoral legislation, thus excluding services may be costly for businesses due to re-design in addition to the decreased of potential customer base.

There are thus several arguments for the need to research whether current service design methodology and practice sufficiently supports universal design. This thesis aims to contribute to strengthen the awareness of universal design in the field of service design. In order to promote the likelihood of service designers creating inclusive services, it is considered of interest to investigate the current best practices and how these supports or relate to universal design perspectives. As such, the following research questions are investigated:

1. Too what degree is there an awareness of universal design in current service design methodology and practices?
2. In what ways can this information contribute to strengthen the awareness of universal design in the field of service design?

The structure of the thesis is as follows: in Chapter 2, background information on service design and universal design is addressed, as well as todays status of the field. Chapter 3 gives an explanation on methods and approaches that are used to answer the research questions. Interview- and literature study are used to gather information, and Chapter 4 shows the findings from the two methods. Chapter 5 discuss the findings in order to answer research question one, and contributions are suggested in order to answer research question two. Conclusion and suggestion for future work can be read in chapter 6. Last, chapter 7 shows the bibliography.

1.1 Terms in Use

According to Merriam (2009) the first research question may be viewed as "basic research" where the main goal is extension of knowledge. However, the second research question may

be viewed as "applied", seeking to improve the quality of practice within a particular discipline (Merriam, 2009, p. 3). The contribution and audience of the thesis is thus two-fold; 1) an academic contribution to strengthen the body of knowledge on the status of universal design practice within service design and 2) proposing ways this knowledge can be utilized to improve the universal design quality of service design practice.

Regarding the first research question, addressing the "degree" to which there is an "awareness" of universal design, these terms are interpreted as follows:

Degree: This study will not generate a number to express the degree, but will seek to explain in an intangible way if the awareness is non-existent, high or somewhere in between.

Awareness is in this thesis used to describe the knowledge and/or perception informants have about universal design in their work with service design, and the presence and/or description of universal design in literature about service design.

Service design do not have a common definition yet. The methodology is further described in Chapter 2, section 2.1 Service design.

Further, the term *Universal Design* can have different definitions and terms. In this study, universal design is defined as the design of products, services and environments to be usable to all people, to the greatest extent possible. It is also referred to as *Inclusive design.* This is further described in Chapter 2, section 2.2 Universal design.

Further, the research question refers to methodology and practices in service design. In this thesis *methodology* are the systems of methods used in mainstream service design discipline, and *practices* refers to the projects and work utilized by service designers, both in real life and in the literature.

The second research question ask in what "ways" the "information" can be used to strengthen the awareness of universal design in the field of service design. This refers to what course of actions can be proposed based on the results from the study, to promote the awareness of universal design in the field of service design.

2. Background

This chapter describes service design and universal design as methodologies. It also addresses laws and regulation regarding universal design in Norway. The last section discusses shortly todays status regarding universal design in service design.

2.1. Service design

Service design is a fairly new design discipline that combines different methods and tools from other disciplines, such as marketing, human resources, interaction design organizational structures and technology disciplines(Teixeira, Patrício, et al., 2012). Service Design methodology focus on mapping out, analyzing, designing and ensuring positive user experiences across types of touch-points, types of medium used (digital, paper, TV, radio etc.), types of devices (mobile, web), platforms (iOS, Android, MS, Linux), browsers etc. used, type of usage situations, weathers (in rain, sunshine, cold weather) and so forth. The aim is to design cross-channel services; arranging, planning and systematize people, communication, material components and the infrastructure of a service. The discipline focuses on what channels and solutions are best suited both to the needs of the customer and the service provider.

The discipline do not have a common definition yet, even though there are many suggestions. Schneider et al. (2012) have listed several academic approaches for a definition. Some of them are:

"Service design helps to innovate (create new) or improve (existing) services to make them more useful, usable, desirable for clients and efficient as well as effective for organizations. It is a new holistic, multi-disciplinary, integrative field" (Schneider et al., 2012, p. 31)

"Service design is all about making the service you deliver useful, usable efficient, effective and desirable" (Schneider et al., 2012, p. 31)

"Service design is a holistic way for a business to gain a comprehensive, empathic understanding of customer needs" (Schneider et al., 2012, p. 32)

Service design began in the 1990`s when a group of scholars started to specify it as a new design area. It was first in 2000 it emerged as a design profession, when the first service design studio opened in London (Sangiorgi & Prendiville, 2014). One thing that divide service design from other user-centered design disciplines is that service design has a holistic

view, and do not only see the user, or customer. It also explores the background of a service, with systems and employees (Polaine, Løvlie, & Reason, 2013). Service design as the development for new services have in the past, been discusses in non-design related disciplines as management and marketing. One possible reason for this is that, in a traditional way, design is the creation of tangible things, such as webpages, building or products. In reality, there are many aspects of a service that belong in the universe of design. Everything from analysis of technological potentials, to users behavior and attitude towards the service, product and technology (Reim, Parida, & Örtqvist, 2015).
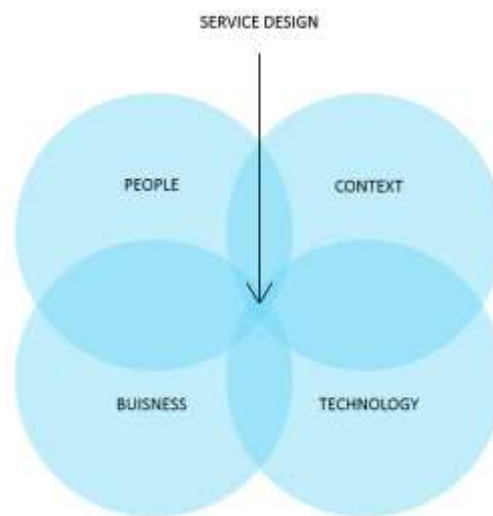
Figure 1: Components of services (Curedale, 2013, p. 16)

The way we experience services and how service providers deliver a service have in many ways changed the past years. Maybe the biggest reason for this is new and advanced technology (Ostrom et al., 2015). Customers get experience from interaction with services, products and contexts. With technical support, services can make the customer a co-creator in real time and tailor the service and adapt to customer needs over time (Patrício, Fisk, & Falcão e Cunha, 2008).

One important aspect in service design are touchpoints. Touchpoint is the term for all the times a customer can interact with a service. Some examples for touchpoints can be interaction with a service through webpages, applications on mobile phone or to call customer service (Polaine et al., 2013). Services such as banking was earlier a service where the customer needed to visit and interact with an employee. Today, banking can be utilized in many different interactions, and it is common that the customer can sit in their own house and

have contact with the bank through digital technology. Digital touchpoint is an increasing factor for many businesses as the digitalization evolves, and customers today have many possible channels to interact with a service. In this context, the experience of a service become increasingly important to separate one from others, and to add value to a firms offerings (Patrício et al., 2008). Some authors claim that customer experience will be the future competitive background. Customer experience can be viewed as a holistic concept that encompasses every aspect of a firms offering, and service designers acknowledges this importance when designing services (Teixeira, Verma, et al., 2012).

A problem related to service design is the limitation on research and knowledge on innovation in this field. In the past, the main focus have been on production design for value creation, Today, services are the most important value creation in most western countries (Norlie & Nordvik, 2012).

Services measured by DESI are among others related to electronic information sharing, eCommerce, eInvoicing, social media, online forms and service completion in eGovernment, and is typically delivered through web and mobile interface(DESI, 2017b). Norway is among the most digitalized countries in DESI 2017(DESI, 2017a) and in an international survey, regarding the use of service design, Norway have a high score in the use of service design in public sector (Birgit Mager, 2016).

"We are far ahead in maturity using this method of development of public services." - (AHO, 2016)

2.1.1 InnoMed and method cards

InnoMed is a Norwegian company that work with user-centered design and service design. Their vision is health-based value creation for the benefit of patients and society (InnoMed, 2015). They have developed a set of method cards with 20 methods, that are custom to service design project. The methods are known methods that they have adapted to their own use(InnoMed, 2016).

Method cards are a collection of methods gathered and explained in cards related to design approaches. InnoMed`s method cards are the only discovered in the field of service design. However, regarding user-centered design, more appear, such as method cards from IDEO (IDEO, 2003), and Alexandra institute (Alexandra, 2012). The method cards seek to guide and be an inspiration for designers. In a pre-study conducted by the researcher (Bue, 2016) a simple comparison of these method cards was made and although there are many similarities,

the method cards from IDEO and Alexandre encouraged to a higher degree of user inclusion than InnoMed.

2.2 Universal design

Universal design originates from the architecture, and was first mentioned in an article by art architect Ronald L.Mace in 1985 (Engebretsen, 2015). Today, universal design deals with all parts of our society, not just construction of buildings. Universal design is defined as *"the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design"*(Law, Yi, Choi, & Jacko, 2008). Universal design and Inclusive design is often referred to as the same design principle (John Clarkson & Coleman, 2015). Universal design is the most common term in Europe and Norway and is therefore used in this thesis(Goodman-Deane, Langdon, & Clarkson, 2010; Wilkinson & De Angeli, 2014).

A universally designed society will give more people the opportunity to work, and the need for special adaptions, for example assistant technology, will decrease. This will be beneficial and economic positive for the society, and increase business for companies (John Clarkson & Coleman, 2015). People all around the world is increasingly ageing, and there is predicted that by 2050, approximately 21% of the world population will be over 60 years old. In 1950, the number was 8% (Keates, 2015). With higher age, many different challenges and needs can occur for the mainstream population(John Clarkson & Coleman, 2015; Keates, 2015). As a general goal, universal design aims to contribute to equal participation and gender equality in the population, regardless of individual assumptions(Steinfeld & Maisel, 2012)

A more flexible and wider service design approach, with focus on universal design, may also lead to more potential customers. When people feel included and well taken care of they will be satisfied and the chances that they return as costumers are high (Vandermerwe & Rada, 1988).

Although a society that is universally designed could contribute to increased equal accessibility and participation for people with disabilities, it is not persons with disabilities who are the target audience alone. Universal design is a necessity for someone, but an advantage for everybody (Rotvik, 2014). When designing for a wider population, one makes services and product easier to use for everyone. When you make a building accessible for someone with a wheelchair, you are also making it accessible for parents with a stroller.

Universal design is also related to ensuring high usability regardless of contexts-of-use, situations occurring, the user's states-of-mind, etc. People with temporary disabilities do also benefit from universal design. A universally designed society shows an ideology of equality and a step away from discrimination and exclusion. Universal design is likely to help ensuring the inclusion of elderly, ill and disabled citizens in the everyday life. This will be beneficial not only for the individual and his/her families but also the society (Engebretsen, 2015).

A group of architects, product designers and environmental design researchers developed a set of seven principles in 1997. The principles are: 1) Equitable use 2) Flexibility in use 3) Simple and intuitive use 4) Perceptible information 5) Tolerance for error 6) Low Psychical effort 7) Size and space for approach and use. The seven principles of Universal design have a purpose to guide design of environment, communications and product (Story, 1998).

According to Steinfeld and Maisel (2012), barriers are a key concept in universal design. We find barriers everywhere, and for all people. It is important to emphasize that barriers are not defined as complete obstacles that make it impossible for a person's desired activity. It is also a form of resistance, which slows and hurts an individual's goal and task. While something can be perceived as a trivial barrier for most people, for other it can be a barrier that are blocking on a physical and/or mental level. Communication, understanding, expression and availability are all potential barriers. Defined as a common word, barriers can lead to exhaustion, limit self-realization and, at worst, lead to complete exclusion from society (Engebretsen, 2015).

2.2.1 Laws and regulations

It is a political responsibility to ensure that no one is discriminated against, and universal design is therefore increasingly included in more laws and regulations in Norway. Two of the most important is the discrimination and availability acts (DTL) and the planning and building act. The discrimination and availability act were put in to effect in 2009 (Det kongelige barne- og likestillingsdepartement, 2009). DTL determines services targeted to the public must be universally designed, but there are few guidelines on how to quality control the universal design quality of a service. Universal design requirement addressed to Information and communication technology (ICT) are based on principles of the Web content policy (WCAG). This is mentioned further in section 2.2.2.

The Norwegian government decided in 2009 that Norway should have the goal to be universally design by 2015 (Huitfeldt, 2009). However, in a more resent report from the

government (Barne og Likestillingsdepertementet, 2016) this goal is not mentioned. They state in the report that they will continue to work towards a universally designed society, and that the focus will be for ICT-solutions and welfare technology. The Norwegian association of disabled (NAD) did not let this go unnoticed and stated that: *"investing in ICT and welfare technology alone is not enough if we are to create a society where people with disabilities can participate in the same way as others. An active effort is required in many areas of society."* - (TheNorwegianAssociationofDisabled, 2016)

They also point out that there is no new proposal for measures, the measures that are included in the report have already been included for several years.

2.2.2 WCAG 2.0

Standard Web Content Policy (WCAG) 2.0 is a set of guidelines to help make web content available for as many users as possible, including people with disabilities such as blind, deafness, learning disabilities, cognitive limitations, speech disabilities and so on (W3C, 2008). WCAG 2.0 are developed in cooperation with individuals and organizations around the world. The Universal Design of ICT Solutions Regulations prescribe that web pages must meet 35 of 61 success criteria in the Standard Web Content Policy (WCAG) 2.0 Guidelines. Specific guidelines such as WCAG 2.0 are needed to make the work with universal design easier for designers and developers. However, designers and developers need to be aware that the inclusion for real users are still needed. Even though guidelines and criteria exist, there can still be needs and barriers that are not covered. Universal design needs to be more than a list of criteria's (Johnsen, 2017).

2.3 Status of the field

Information on universal design in service design seems to not be covered in the literature. Since service design is still young, many express the need for more research:

"The rapid evolution of service systems raises new challenges for service design. Consensus is emerging across service fields that further research is needed to address these challenges in marketing, operations management, innovation management, interaction design, design, and service science. Some areas need particular attention, such as the growing complexity of service systems, the emergence of multichannel services, customer cocreation of service experiences, and the need for interdisciplinary methods." - (Patrício, Fisk, Falcão e Cunha, & Constantine, 2011)

When service design is new, under-researched and complex, it is easy to understand the need for research in many parts of the methodology. Still, the lack of universal design seems as a big cap, especially when service design is perceived as a design approach that makes services that are user friendly, easy and intuitively (Curedale, 2013). When searching the literature, only one article have addressed the same problem. Santana et al. (2017) describes a project regarding the use of wheelchairs and public transport. They say that traditional service design development is not adapted to include people with disabilities, and therefore, the field lack characteristics on this varied group of users. Expertise on universal design in the field of service design is absent in the literature (Santana et al., 2017).
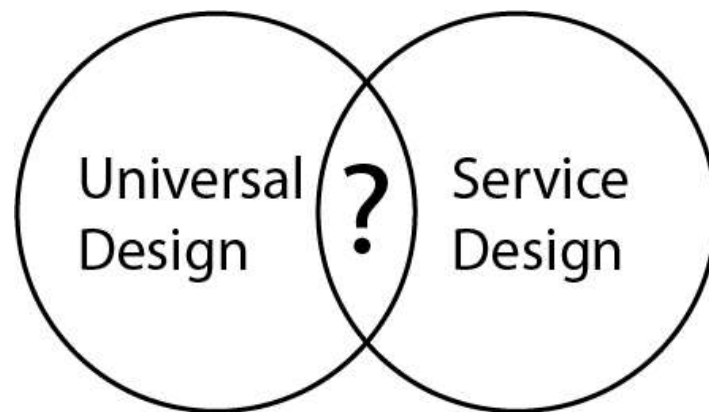
Figure 2: Lacking definition for universal design in service design.

3. Methodological Approach

The overall research approach of the study is exploratory and qualitative in nature(Marshall & Rossman, 2011; Merriam, 2009). As Merriam notes, qualitative researchers are typically interested in aspects such as understanding how people interpret their experiences, how they construct their worlds and what meanings they attribute experiences(Merriam, 2009, p. 5) The reasoning for a qualitative approach in this study is the research questions point to eliciting tacit knowledge and subjective understandings on informal and unstructured and complex practices in organizations, and is also exploring a little known phenomenon (Lincoln & Cuba, 1985; Marshall, 1985a, 1987 in Marshall and Rossman, 2011:p91).Marshall and Rossman (2011) outline the following three overall strategies within the qualitative genre, investigating 1) Individual lived experience, 2) Society and culture and 3) Language and Communication.

Genre	Main Strategy	Focus of Inquiry
Individual lived experience	In-depth interviews	Individuals
Society and culture	Case study	Groups or organization
Language and communication	Microanalysis or text analysis	Speech events and interactions

Table 1: Qualitative Genre and Overall Strategy(Marshall & Rossman, 2011, p. 93)

The starting point of this thesis is to explore the field of service design, methods and practices currently established in the field through a literature study, followed by an interview study, in order to answer the first research question *Too what degree is there an awareness of universal design in current service design methodology and practices?* As such, based on Marshall and Rossman (2011, p. 93), the study falls into the second genre, and may be labeled a case study as the main research strategy is combining several research methods. Further, and supplemented by Innomed's method cards for service design, interventions could be proposed, answering the second research question *In what ways can this information contribute to strengthen the awareness of universal design in the field of service design?* However, the research design was not straightforward.

The research process started with searching literature for related work on universal design in the field of service design. This proved to be difficult, as the topic is yet under-researched despite the great demand for inclusive services (Santana et al., 2017). As such, the choice was made to abandon a structured literature search and continue with exploratory interviews. Exploratory interviews are intended to provide understanding of a complex and multifaceted

situation, and overlaps with the case study approach as well as ethnography (Lazar, Feng, & Hochheiser, 2010, p. 181). The initial goal for the interviews was to have about 15 informants, and be the main data collection method. As such, the emphasis in the research design was intended to be on exploring individual lived experiences through in-depth interviews (Marshall and Rossman (2011) genre 1), using literature as a backdrop for formulating interview focus.

However, after merely five interviews were undertaken, the information gathered was not satisfactory to continue with a large interview study. Few new insights were made after the initial three interviews and the preliminary analysis indicated the service designers were not able to inform on the first research question using the semi-structured interview guide. The main reason was assumed to be the broadness of service design as a field, and the yet too limited in-depth understanding of the field (by the researcher) to adequately define the right sub-population of service designers and service projects to sample, and yet to limited awareness of universal design by the sampled service designers. However, the information from the interviews was able to guide the researcher in efforts to go back and do a more thoroughly literature study. As such, the literature study and the interviews are conducted and analyzed in parallel and iteratively to answer the first research question. In the thesis, the literature study is presented first and the interview study second. The second research question is largely based on discussing these findings in order to propose ways this knowledge can be utilized for improving universal design in service design practice, however the interviews also touch upon the second research question in order to map practitioner's views.
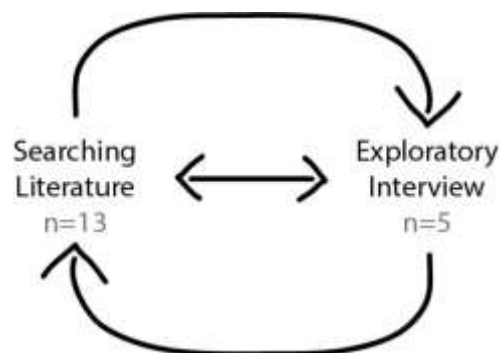
Figure 3: The research process

3.1 Literature study

The aim of the iterated and final literature study is to get an overview of documented practice in service design in general. The purpose is to see if there are common practices in the field with regards to process approach and the use of methods. Further, to what degree inclusive aspects and universal design awareness is present, including the types of users receiving focus.

3.1.1 Sample

NTNU`s Oria library was used to search all databases the researcher has access to, in order to determine which databases the literature study should span. By searching in the category "design", 15 databases were identified. Since service design emerged as a profession around year 2000 (Sangiorgi & Prendiville, 2014), the search was limited to the years between 2000 and 2017. Combined with the choice to sort literature based on their citations, this search approach is believed to successfully combine "newness" (knowledge is updated thus relevant) with "impact" (knowledge is being utilized thus relevant). Three of the 15 identified databases have the opportunity to sort by "most cited", these were: ACM Digital Library, Scopus and Web of Science. After sorting on most cited, the articles were considered from top to bottom, and screened for relevance. As Table 2 shows, 175 returned articles were screened, with a cut-off rate was at 45 or more citations.

	Search	Results	Results > 45 citations	Included
ACM Dig. Lib.	"service design", ACM proceedings	224	4	0
	"service design", ACM journals	7	0	0
Web of Science	"service design", all articles	718	28	3
Scopus	"service design", all articles	2466	163	13 (10 new)
Total		3415	175	13

Table 2: Search Results and Screening Results

Using the term "service design" ACM returned only 290 results (7.12.2017), and unlike the other two databases, these results could not be limited to "articles". Thus, the choice was made to look at "ACM proceedings" and "ACM journals" only – excluding ACM magazines

and ACM newsletters. With this limitation, Table 2 shows ACM Digital Library returned a total of 231 results, of which 224 are proceedings and 7 journals. Scopus and Web of Science returned a lot more articles. Using the term "service design" and choosing articles, Scopus returned 2466 results (17.11.17), and Web of science returned 718 results (17.11.17).

In addition to publication date and citation count, the criteria for article inclusion are: 1) the work is within or about service design, and 2) the work there reports on practice with methods related to service design (and not just a theoretical discussion). As such round table discussions, that do not describe methodology and/or methods was not included. A total of 175 articles were screened. To consider if the articles were relevant for the study, the abstract and keywords was read, and, in case of doubt, the introduction and conclusion was scanned. When the screening finished, the included article sample consisted of 13 articles, which are presented in Table 3. The main reason for exclusion was the meeting the first inclusion criteria on being about service design. It seems that "service" and "design" are very commonly used terms, and that if a sentence ends with "service" and the following sentence starts with "design" in an article, the database search engines will return this article as fitting even quoted search phrases.

The results from the three databases seem to overlap. All the relevant articles from Web of Science are duplicated in Scopus. Scopus is one of the largest multidisciplinary databases and covers research from both major and minor publisher, such as Elsevier, Emerald and Springer(Reim et al., 2015). Scopus returned all the included articles, and had, overall, the most citations. Therefore, the citation counts from Scopus become the standard for lineup of the selection.

	Title	Database	Published	Date found	Cited
1	Service Design for Experience-Centric Services (Zomerdijk & Voss, 2009)	Scopus	2010	21.11.17	207
2	Key strategies for the successful involvement of customers in the co-creation of new technology-based services (Kristensson, Matthing, & Johansson, 2008)	Scopus	2008	21.11.17	154
3	Designing Multi-Interface Service Experiences (Patrício et al., 2008)	Scopus	2008	21.11.17	124

4	Multilevel Service Design: From Customer Value Constellation to Service Experience Blueprinting (Patrício et al., 2011)	Scopus/Web of Science	2011	21.11.17	110
5	Toward an integrative approach to designing service experiences Lessons learned from the theatre (Stuart & Tax, 2004)	Scopus/Web of Science	2004	21.11.17	73
6	Field trial of Tiraisu: crowd-sourcing bus arrival times to spur co-design (Zimmerman et al., 2011)	Scopus/Web of Science	2011	21.11.17	66
7	Customer experience modeling: from customer experience to service design (Teixeira, Verma, et al., 2012)	Scopus	2012	21.11.17	61
8	Strategies for designing and developing services for manufacturing firms (Tan, Matzen, McAloone, & Evans, 2010)	Scopus	2010	21.11.17	60
9	A Qualitative Cross-National Study of Cultural Influences on Mobile Data Service Design (Choi, Lee, Kim, & Jeon, 2005)	Scopus	2005	21.11.17	54
10	Designing for Service as One Way of Designing Services (Kimbell & Kimbell, 2011)	Scopus	2011	21.11.17	52
11	Understanding service experience in non-profit performing arts: Implications for operations and service management (Hume, Sullivan Mort, Liesch, & Winzar, 2006)	Scopus	2006	27.11.17	49
12	Managing User Involvement in Service Innovation (Magnusson, Matthing, & Kristensson, 2016)	Scopus	2003	27.11.17	48
13	Requirements engineering for e-Government services: A citizen-centric approach and case study (van Velsen, van der Geest, ter Hedde, & Derks, 2009)	Scopus	2009	27.11.17	47

Table 3: Included Articles in Literature Study Sample

3.1.2 Literature Analysis

After screening, the included articles were read to map the following four main topics; 1) methods used, 2) overall design process approach, 3) user group involved and any focus on

marginalized users and 4) whether inclusive design or universal design is mentioned or reflected upon. Further, summarized information and other relevant information was extract, including which service areas and topics is commonly repeated through many of the articles. A tabled text-document was created, structuring the mapped and extracted textual information. This content was next transferred into Nvivo for further analysis.

Only three of the four main topics became categories in Nvivo, labeled: "methods", "process approach" and "Users" (with the sub-category "focus on marginalized user groups"), as none of the articles reflect upon universal design aspects. The category "methods" collects data on the description of specific techniques and methods. Descriptions of processes or approaches, for example case study and co-creation, are categorized into the "process approach" category. This is thus a more overall description on the projects. In a case study, one will often have more than one method. For example, interviews together with observation. To make sure that important information regarding marginalized users not have been overlooked, all the documents was search for these words: impairment, handicap, disabled, blind, deaf, wheelchair, special need, cognitive.

3.2 Exploratory Interviews

The interviews aimed at creating an overview of the current practice in service design projects today. The interviews are semi structured (Lazar et al., 2010), with both quantitative and qualitative questions. The quantitative questions worked as a guide to make sure to keep the conversation on right track, but follow-up questions were also used through the interview. The qualitative questions were about background of the participants, methods they use in their work, users they include in projects, some statement they were asked to rank and two questions where they were asked to rank themselves.

3.2.1 Interview guide

The interview guide consists of 17 questions collecting data relevant for the two interview questions as well as background data on the informants. Table 4 displays the questions (items) relevant to the focus, type of data and research question. The interview guide in its entirety can be seen in Apendix C.

Research Question	Interview focus	Item	Type of data
1	What is the self-rated service design and universal design competence?	3,4	Quantitative
	How is universal design included in current practices?	5,6	Qualitative
	What methods and processes are utilized?	10,11, 12	Quantitative and qualitative
	What users are included and how?	13,14, 15	Quantitative and qualitative
2	What would be the preferred manner to work with universal design in service design?	7	Qualitative
	What promotes universal design in service design?	8	Qualitative
	What obstructs universal design in service design?	9	Qualitative
Information about the informants	Age, background/education, experience, title, workplace	1,2,16 ,17	Quantitative and qualitative

Table 4: Interview Guide Overview - Focus and Questions

3.2.2 Sample Selection criteria and Recruitment Strategy

The only sample inclusion criteria for informants are that they work in the field service design. The recruitments were conducted by sending email to companies that flags that they have expertise in service design, or have employees with the title *service designer*. The companies then forwarded the email to appropriate candidates. 13 companies were contacted through email, based on the researcher's network and online search, as the initial goals was to recruit approximately 15 service designers.

3.2.3 Pilot test

To identify potential biases(Lazar et al., 2010), a pilot test was conducted before the interviews. The pilot informant was recruited through the researcher's personal network. The informant does not work as a service designer, but as an interaction designer with knowledge about service design. The aim of the pilot test was to see that the questions in the interview guide were easy to understand and to get an estimate on how much time is needed for the interview. The interview was aimed to last about 60 minutes, but the pilot test lasted 90 minutes. The guide thus needed to be shortened. The phrasing of the questions was not alternated based on the pilot test, but some of the questions was moved to the end of the

interview as "back-up" probes if there would be enough time. The final interview guide is found in Appendix B.

3.2.4 Interview Analysis

An inductive analytical approach was therefore used to get novel insight about individual perspectives and experiences, without the purpose of generalizing these. Without a body of research to inform the interview guide, these were largely exploratory. Transcribing of the interviews was done continuously as the interviews were conducted. The transcribed material was then transferred to Nvivo for coding. Emergent coding was selected for the content analysis of the interviews. This way of coding is appropriate in topics that has limited literature to build on(Lazar et al., 2010). The texts were read several times to identify themes that emerge from the data. The audio files were used to contribute in the analysis process.

Nvivo was used to code and analyze. The nodes were iteratively labelled to quality secure the correct code categories. In the first iteration, the text was reviewed as a coherent text without looking at questions asked and the overall meaning. Second, the text was reviewed again, but this time with the focus on what question that was asked. Naturally, this lead to many changes in the nodes. More categories were made, and many nodes were deleted because the meaning of the nodes were invalid when looking at the context. After these two iterations some nodes were not yet categorized. The goal of the third iteration was to categorize all the nodes, two new categories were made, and some nodes were put in existing categories.

The result of this initial analysis was six categories and 137 nodes. The six categories were:

1) *Background*: personal information about why the informant got the interest in service design and if they said that they have had any education about universal design.

2) *Current practices in SD project*: What the informant tells about how the situation in project and the field of service design to day.

3) *How to promote universal design in service design*: thoughts about how we can increase the focus on universal design in service design, what the informant's thinks can be useful in the future.

4) *Methods*: What methods used in projects depends on. Not directly which methods they use (that is in a quantitative table)

5) *Reasons for little focus on universal design in service design*: All the informants agree that the focus on universal design is low or not present at all in service design, this category tells what they believe is the reason.

6) *Recruitment:* How the informants recruit users to interviews and test.

After the initial analysis, a second iteration of qualitative analysis was conducted, looking at the relationships between the identified six categories and re-evaluating their content. Based on this second and final analysis, the categories 4) "Methods", 5) "Reasons for little focus on universal design in service design" and 6) "Recruitment" was classified as sub-categories to 2) "Current practices in service design projects".

3.3 Ethical considerations and privacy

When recruiting participants and conducting interviews, the researcher shall respect the requirement for free and informed consent and ensure the privacy of the informants(Torp, 2016). Before the interviews, the informant received a document with information about the purpose of the study (Appendix A), how the results would be published, how their anonymity was secured and their right to withdraw from the study at any given time. Their consent was given by writing, or oral while recording. Confidentiality was assured by keeping personal information and interview transcript separate. A phone was used for recording the interviews. The recordings were deleted from the phone as soon as they were transferred to a personal server protected by password. All names of individuals, companies and cities were anonymized during the transcription. Quotes or findings that could indirectly be linked to an informant were avoided.

Every study conducted in Norway that process personal data or are conducted by a students or researcher from NTNU must have approval from Norwegian center for research data(NSD) (Norsk senter for forskningsdata, 2017). The study was submitted to NSD, and the application was granted 3. April 2017.

3.4 Validity

The validity of a study is to what degree the study is accurate, meaningful and credible (Leedy & Ormrod, 2012). When considering the validity, there are two aspects, internal and external. Internal validity determines to what extent the results are valid for the population and the

phenomenon which is explored. External validity is whether the results can be used to generalize to other contexts (Leedy & Ormrod, 2012). Implementing two different methods in this study will benefit the validity of the results. A bigger sample of articles and/or informants, or a third method would be preferable to further strengthen the validity.

For the literature study, the databases returned a total of 3415 results, however only 13 articles were included in the final literature sample. Based on this, the validity is not satisfying. However, before the sample was complete, 175 articles needed to be considered. Even though the search term was "service design", many of the articles in the list of results did not contain anything about service design as methodology. "Service" and "design" are two common words in many fields of research, and this is the reason why many of the articles were not relevant. This was unfortunate, as many resources were spent on screening irrelevant articles that could instead have been utilized to read a larger literature sample.

For the interview study, the informants were asked to consent to sound recording, and these recordings strengthen the validity in the transcription and analysis. In the analysis of the fourth and fifth interview, few new nodes were made, and few new insights were gathered. This indicates that the number of interviews were sufficient for revealing relevant information using this guide on this sample at this stage in time. However, generally, one would expect a higher number of informants to strengthen the validity of an interview study.

Viewing this thesis as an exploratory and qualitative case study, it could have been strengthened by adding an additional method for collecting empirical data – for example exploring real life projects in Norway. In-depth interviews will give information on the informant's own behavior and perspectives. In some cases, this might not match with what actually have been done, something an observation probably would help reveal (Leedy & Ormrod, 2012).

As for the external validity this study does not have a goal to generalize. It is common for qualitative research to study a small research area in depth rather than generalize based on data from many cases. This study is one such qualitative and explorative contribution in the field of service design. However, taking a qualitative approach, it is difficult to prove that the findings are relevant for other populations or to generalize to other contexts (Leedy & Ormrod, 2012).

3.5 Reliability

For a study to have a high reliability, the same results should be achieved by following the exact same approach, in the same context and including the same participants (Leedy & Ormrod, 2012). The nature of qualitative research makes reliability problematic because the results are directly linked to the complexion of the phenomena and the researchers review of the observations. Shenton (2004) suggests that reliability could be addressed as *dependability* in qualitative research. To ensure the dependability, the study should be described in detail, so that another researcher can follow the exact same approach, but not necessary achieve identical results. A detailed description of the research methodology will also help readers assess whether the study is conducted with good or bad research practice. To assure reliability (or dependability) in this study, a detailed description of the methodological approach has been attempted.

4 Findings

This chapter presents findings, first from the literature study, then from the interview study and finally a comparison of key findings from the two methods.

4.1 Literature Study

The articles that are included in the sample for the literature study are all published between the year 2003 and 2012. They represent five different publication sites: Sage journals, Emerald insight, Elsevier science direct, International Journal of Design and ACM digital library. Two articles (Kimbell & Kimbell, 2011; Zomerdijk & Voss, 2009) describes case studies utilized in different service design- and service provider firms. Stuart and Tax (2004) have conducted a project where they have used parts from the theatre to improve service design. van Velsen et al. (2009) describes a project regarding eGoverment and the remaining articles are about projects in different services, such as mobile data services(Choi et al., 2005; Kristensson et al., 2008; Zimmerman et al., 2011), telecom service(Magnusson et al., 2016) bank services (Patrício et al., 2008; Patrício et al., 2011), multimedia service (Teixeira, Verma, et al., 2012), industrial companies that offer refrigerator controls and furniture manufacturer(Tan et al., 2010) and ticket sales (Hume et al., 2006).

	Title	Database	Published Date:	Date found	Cited	Published at:
1	Service Design for Experience-Centric Services (Zomerdijk & Voss, 2009)	Scopus	3. December 2010	21.11.17	207	Sage journals
2	Key strategies for the successful involvement of customers in the co-creation of new technology-based services (Kristensson et al., 2008)	Scopus	29. November 2008	21.11.17	154	Emerald insight
3	Designing Multi-Interface Service Experiences (Patrício et al., 2008)	Scopus	13. March 2008	21.11.17	124	Sage journals
4	Multilevel Service Design: From Customer Value Constellation to Service Experience Blueprinting (Patrício et al., 2011)	Scopus/Web of Science	29. March 2011	21.11.17	110	Sage journals

5	Toward an integrative approach to designing service experiences Lessons learned from the theatre (Stuart & Tax, 2004)	Scopus/Web of Science	25. September 2004	21.11.17	73	Elsevier Science direct
6	Field trial of Tiraisu: crowd-sourcing bus arrival times to spur co-design (Zimmerman et al., 2011)	Scopus/Web of Science	7. May 2011	21.11.17	66	ACM digital library
7	Customer experience modeling: from customer experience to service design (Teixeira, Verma, et al., 2012)	Scopus	1. March 2012	21.11.17	61	Emerald insight
8	Strategies for designing and developing services for manufacturing firms (Tan et al., 2010)	Scopus	4. March 2010	21.11.17	60	Elsevier Science direct
9	A Qualitative Cross-National Study of Cultural Influences on Mobile Data Service Design (Choi et al., 2005)	Scopus	2. April 2005	21.11.17	54	ACM digital library
10	Designing for Service as One Way of Designing Services (Kimbell & Kimbell, 2011)	Scopus	15. August 2011	21.11.17	52	International Journal of Design
11	Understanding service experience in non-profit performing arts: Implications for operations and service management (Hume et al., 2006)	Scopus	1. April 2006	27.11.17	49	Elsevier Science direct
12	Managing User Involvement in Service Innovation (Magnusson et al., 2016)	Scopus	2. November 2003	27.11.17	48	Sage journals
13	Requirements engineering for e-Government services: A citizen-centric approach and case study (van Velsen et al., 2009)	Scopus	15. April 2009	27.11.17	47	Elsevier Science direct

Table 5: Included Articles in Literature Study, including publisher and published date.

4.1.1 Universal Design Awareness

There essentially no focus on universal design in the service design projects described in the article sample. Ten out of 13 (77 %) do not mention anything about special needs, disabled or marginalized users. Three of the 13 articles (23%) mention either that it is important to

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consider special needs or to include all user groups. Of these, Kristensson et al. (2008) mentions the importance to include all user groups to make sure that smaller groups with special needs are included. Even so, they have not included anyone with special needs in their own project. Further, van Velsen et al. (2009) and Zimmerman et al. (2011) focus on special needs. Zimmerman et al. (2011) conducted a project to develop a mobile service that, with the help of co-creation, will help travelers to see if their bus is late, and how late. They have not included users with special needs in their study, but they chose to use the iPhone in the field trial because of special adaption: "*because the iPhone has a screen reader that supports blind and low-vision commuters.*" They also mention how the service can be of help to other user groups; "*Finally, we felt fullness would benefit commuters with walkers, wheelchairs, strollers, and large bags*". van Velsen et al. (2009) conducted a project regarding eGovernment service, and have included users with disabilities in the research. As they mentioned in the article, they have only included users that the service targets. In other words, they have only included general users; the difference is that the general users, in this case, have special needs. They do not mention anything about exploring needs beyond their main target group. van Velsen et al. (2009) also discusses the need for interdisciplinary team members that are experts in their fields, but does not mention anything about needing an expert on universal design. As such, none of the thirteen articles describe the inclusion of people with special needs that are not already in the main targeted user group as part of their process approach, and none mention the terms universal design or inclusive design. As such, the level of universal design awareness in literature is considered low.

4.1.2 Methods Used

All the articles document the use of two or more methods. Interviews are overall the most commonly used method based on this sample of articles, and are usually semi-structured or in-depth interviews. Other interviews represented are focus groups, contextual inquiries and field interviews. Ten out of 13 articles report using interviews, and five of these have used interviews more than once. Observation is the second most used method, and is documented in six of the articles. Together with interview and observation, sixteen other methods are described in the articles. These are evenly divided between all thirteen articles. Customer journey, scenario, walkthrough and workshop are documented three times each, and the rest two or one time (see Table).
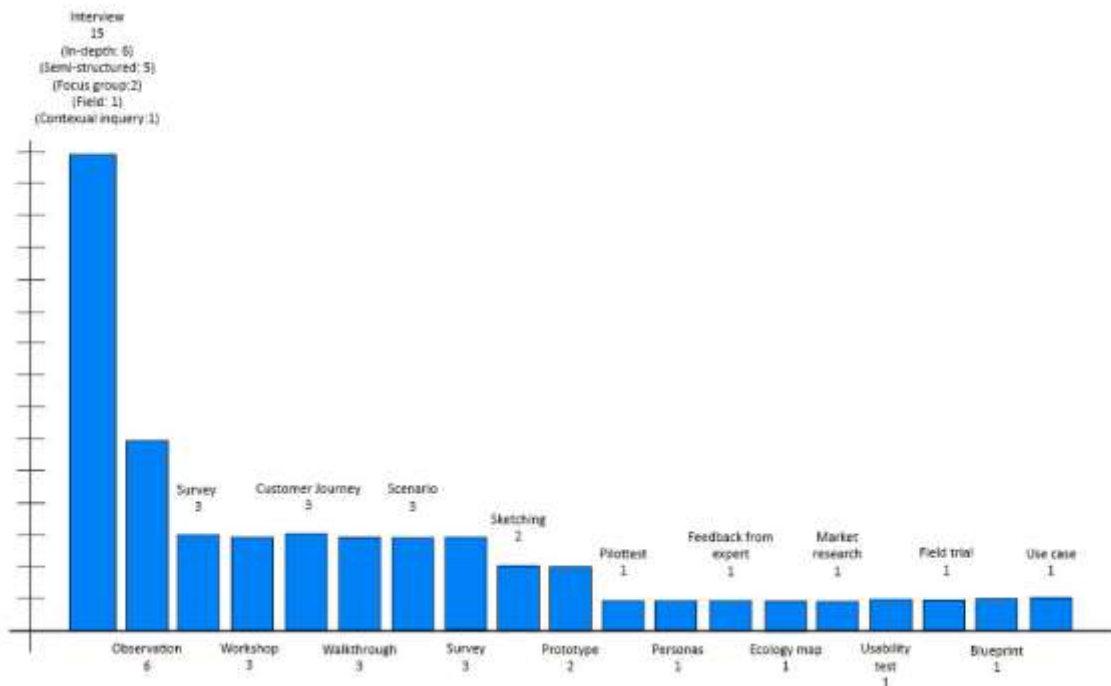
Figure 4: Overview of methods usage in literature

Some articles use primarily one method, but alters the method based on the different stages of the project. For example, Kristensson et al. (2008) utilized two workshops, one at the beginning and one at the end of the projects. Other articles combine methods, such as van Velsen et al. (2009) who used walkthrough, scenario and a prototyping together in one session.

4.1.3 The Design Process Approach

Six articles (45 %) explicitly points out that the study is qualitative. When analyzing article approaches based on the methods used, eleven out of thirteen (84 %) are considered to use a qualitative approach – in particularly due to the heavy use of interviews. Further, all articles have used more than one method, who is also a trademark for qualitative research approaches(McLeod, 2008). Eight of the 13 articles mention or emphasize co-creating as a design strategy (61 %). Co-creation can be described as value creation through the interactions of customer and service providers, or customer and customer(Zimmerman et al., 2011). Overall, the service design projects covered by the literature study seem to have a high focus on including and understanding their users. The focus on co-creation further indicates that they appreciate feedback from users, and have a high focus on user's behavior and experience.

4.1.4 User Focus

All the projects include end-users and emphasize understanding user needs and wishes. Hume et al. (2006) and Zomerdijk and Voss (2009) also returned results to the users involved, to make sure that their interpretations where correct.

> "*These interpretations were returned to the interviewees for examination and comment and were adjusted accordingly.*" (Hume et al., 2006)

Focus on marginalized user groups are however uncommon in the sample of articles, as previously mentioned. None of the studies have included users that are not a general user in their target user groups.

4.1.4 Summary of Literature Study Findings

There is essentially no focus on universal design in the articles identified in the literature study. The literature study gives an impression that methods used are chosen to give a deep understanding of the user's needs. Process approaches are overall qualitative, and user centered. Interviews are the most commonly used method, however there is a large variation in method usage in the articles, which may indicate that people working with service design projects are free to use what methods they seem to fit the current project.

4.2 Interview Study

13 companies were contacted, requesting service designers as interview informants. 4 of these companies answered with a positive response, resulting in 5 informants. 1 company answered that they did not have opportunity to participate and 8 did not respond.

All the five informants are female, and below 40 years of age. Four are below 30 years of age. Even so, the average years of experience in service design is just under 4 years. All the informants have a design education, either in product design, industrial design or graphic design. Most have the title "Service Designer", work as consultants and in large companies. Tables 6 and 7 summarizes background information on the informants.

	Gender	Age	Education	Experience
Informant 1	Female	30-39	Design	6 years
Informant 2	Female	Under 30	Design	5 years
Informant 3	Female	Under 30	Design	2 years
Informant 4	Female	Under 30	Design	< 1 year

Informant 5	Female	Under 30	Design	5 years

Table 6: Informant Background Information

	Workplace	Type	Size	Title
Informant 1	Company 1	Consultancy	Large	Senior Designer
Informant 2	Company 1	Consultancy	Large	Senior Designer
Informant 3	Company 2	Banking Service	Large	Service Designer
Informant 4	Company 3	Consultancy	Large	Service Designer
Informant 5	Company 4	Consultancy	Medium	Designer

Table 7: Informant Company Information

4.2.1 Universal Design Awareness

The informants have all worked on several different projects, and they have all worked on projects that target the public. Nonetheless, the informants are quite clear on universal design in service design not being something they have much knowledge about or awareness of in their work. Three out of five mentions they have had universal design perspectives included in their educations, but related to other fields than service design – such as architecture and product design. They all have an understanding of the aim and importance of universal design, but do not focus on inclusive aspects in their work in service design. All the informants mentioned that no definition for universal design exists within service design, and are explicit on the fact that universal design is not a priority.

> *"There is no one who talks about universal design in the light of service design"-*
> *Informant 3*

Any awareness and focus on universal design is mostly connected to digital services and architecture; fields that have laws and regulations about universal design. All five informants points out that there are others with the knowledge and responsibility for these exact fields. The service designers have a more holistic view, where the focus on universal design is not present, though some projects targets users with different challenges, for example elderly. Two informants mention that universal design focuses sometimes comes late in the projects because of regulations, and that the projects gains more layers as it moves forward. Sometimes universal design aspects can therefore be an irritating factor, because they need to remake the design as a result of not including it from the beginning.

All informants clearly state they work to understand the user's needs, and thus they feel universal design comes as a natural component in some kinds of projects because of the general user. In other projects, inclusive design is not an element at all. All informants stress that projects in service design can have a large variation, and that this can be a reason for the lacking focus on universal design; there is just not room for it. They express service design is a complex field, and still very young.

> *"The field is still so young that we are filling in the competence, or adding more skills." – Informant 3*

> *"One has to understand that service design is so wide and that make things difficult to perform sometimes" – Informant 5*

The informants further say they have no responsibility for universal design today, but only one of them thinks that it is the right solution and that someone else should have that responsibility. The remaining informants are unsure on whether they should have more responsibility or not. The informants that work in consultant agencies feel awareness and focus on universal design should come from their customers. As consultants, they do what the customer requests, and they state the customer is often unaware or indifferent to universal design. On the other hand, some are also pointing out that many customers are becoming more aware of the benefits of good design, and in projects where universal design has received focus this has been due to customer demands.

The informants were asked to rate themselves on their competence in service design and universal design (within service design) respectively, on a scale from 1 to 7 where 1 is insufficient and 7 outstanding (see Table 8). When asked to rate themselves in relations to universal design competence, the informants feel that it is difficult to answer the question. They all seem unsure about how universal design in service design should be defined and understood. One informant chose not to answer at all, because she did not feel that she could answer in a correct manner.

	Self-rating of competence in Service Design	Self-rating of competence in Universal Design in Service Design
Informant 1	4-5	3-4
Informant 2	6	-
Informant 3	5	3

Informant 4	5	4
Informant 5	6	2

Another question that proved difficult to answer is; *On a successful project, how did you work with regards to universal design?* This is difficult to answer because none of the informants can remember a project where universal design was in focus. One informant talked about a project in health-care where the general users have special needs. Two other informants answered with a new question; *how can we know when no-one has measured success with regards to universal design?* One informant continued by explaining that the services or results they deliver do not get measured with regards to quality aspects. Often, they don't know if what they deliver get implemented or not, or how well it is received.

4.2.2 Methods Used

Informants were asked to rate how often they used different methods in service design, and a list of methods was provided to prompt their reflections. The informants were also asked if they used some methods that did not appear in the table, and for each method to rate the frequency of use. Several of the informants listed other methods, but none of the methods was coherent. The reason for this could be that all the informants describe methods that they, together with colleagues, have re-invented from other methods. These methods are highlighted in the bottom of table 9, but are not included in the result in section 3.4: *Comparison of studies*. Interview was the most used and most preferred method. Both in-depth and focus group were frequently used. Further, all the informants used to have workshops, guerrilla testing, sketching and make prototypes. Four informants rated the use of blueprint as *sometimes*, and the last one as *often.* However, all the informants had a routine where they used to map out the service with all the touchpoints, this process could often vary. Method usage is summarized in Table 9.

	Never	Rarely	Sometimes	Often	Always	Percentage of answer
Blueprints			4:5 (80%)	1:5 (20%)		100%
Interview. *In-depth, one on one, personal*					5:5 (100%)	100%
Observation		2:5 (40%)		2:5 (40%)	1:5 (20%)	100%

Method						Total
Ecology map		1:5 (20%)	1:5 (20%)	1:5 (20%)	2:5 (40%)	100%
Survey	1:5 (20%)	2:5 (40%)	2:5 (40%)			100%
Marked research	2:5 (40%)		3:5 (60%)			100%
Statistical analyses	3:5 (60%)		2:5 (40%)			100%
Personas	3:5 (60%)			2:5 (40%)		100%
Scenario (or user stories)				2:5 (40%)	2:5 (40%)	100%
Customer journeys				1:5 (20%)	4:5 (80%)	100%
Smidig metodikk				1:5 (20%)	2:5 (40%)	100%
Storyboard			3:5 (60%)	1:5 (20%)	1:5 (20%)	100%
Workshops					5:5 (100%)	100%
Sketching					5:5 (100%)	100%
Prototyping					5:5 (100%)	100%
Guerrilla test				2:5 (40%)	3:5 (60%)	100%
Eye tracking	4:5 (80%)	1:5 (20%)				100%
Automatic test of code	5:5 (100%)					100%
Road maps				1:5 (20%)		20%
Interview: *Focus groups*	1:5 (20%)		1:5 (20%)	1:5 (20%)		60%
Observation with interview			1:5 (20%)			20%
Innovation Questions				1:5 (20%)		20%
Service safari					2:5 (40%)	40%
«Typer»					1:5 (20%)	20%
clear goal definition				1:5 (20%)		20%
Idea generating					1:5 (20%)	20%
«what if…»			1:5 (20%)			20%
Design for stereotypical Characteristics			1:5 (20%)			20%
Stakeholder analysis		1:5 (20%)				20%

Table 9: Methods usage in interview study

4.2.3 The Design Process Approach

Next, the informants were asked on their reasons for method selection. The process and methods used by the informants seems to largely depend on the characteristic of the projects. As already mentioned, the informants stress how large variation the projects can have, and this has a big impact on the methods utilized. Further, whether the project is to develop a new service or to re-design an existing one, has an influence on the direction of the project. Time

is the second most mentioned reason for specific methods selected. Other reasons stated are the target users and the designers' previous experiences. All informants stress that they seek to understand the user, regarding aspects such as user needs, pattern of use, touch-point usage, user experiences etc. All prefer qualitative research to get a deep understanding.

4.2.4 User Focus

The most common user focus amongst the informants are to get the general user. One informants say this is often the most average user, while two other stage that this does *not* indicate that they seek the most average user. There is a wish to include a variety of users, although not regarding functional needs. No one focuses on recruiting marginalized user group for edge-case design strategies.

"It is often these demographic factors, like we need people of a certain age, women, men, different households and so forth." – Informants 2

In some project the mass of users is to massive that there is little room for marginalized users:

"For example, if we are going to improve the broadband system. There are a lot of users and then we take a selection of them, and it is usually not the blind user who is most relevant." – Informant 1

However, the informants do work intently to understand the users. All informants agree that they include the user, in some way, in all stages of the project. Input from the users are highly appreciated.

"We work very much with including the end user. I usually say that they are the material of a designer - to have an end user and understand the end-user's needs." - Informant 2

The service design consultants explain they often recruit through their customers, as this is time-efficient, and they get access to current real-life users. Some also use agency where they can ask for demographical characteristics when choosing the users. Four out of five additionally use their private networks. Asking people on the street or in public transportation is also common, but this is mostly used when "guerrilla testing". When recruiting, all the informants want to get in touch with the general user of the target user group. The only time the service designers report targeting marginalized user group recruitment is when marginalized users are part of the general target users.

When questioning the service designers on their focus on marginalized users, all the informants seemed to experience discomfort. Question 11 in the interview guide (Appendix

C) was to get an overview of the focus given to marginalized user groups. To get a generalized impression on the focus levels across time, the service designers were asked to state how frequently they focused on listed marginalized users presented in a table item. Here, all informants expressed that they did not think that such a table would portray a relevant result that would represent the real-life focus need. They all stressed that the need for user inclusion must be determined based on each individual service design project. As such, they felt that taking a closer look on users included in different project over time would not necessarily be meaningful, and would not contribute to understanding the overall focus for service design project. One of the informants gave an example of a service design project she had worked with on a submarine. To work on a submarine, you need to be able-bodied, and as such universal design perspectives are not needed.

However, when looking at the different projects mentioned by the informants during the interviews, all the informants have experience from at least one project targeted to the public. One example is a project regarding services to students. Here, no marginalized users were included. Even if the general mass of student is young and able-bodied, it is hard to argue that one may expect all students to be a homogeneous group of able-bodied, healthy, young and robust users. In fact, the new regulation to the legislation (Regjeringen, 2016) specially protects students with disabilities. Students can further suffer from illnesses, have anxiety, depressions, development disorders, injuries, experience challenging life situations, be stressed, be a single parent etc. The view of this thesis thus remains that, over time, services that are targeting the public need to include a wide specter of marginalized user group. Further, the question on marginalized user group focus also had an open question to cover other marginalized user groups the informants may have included. None of the informants could mention other user groups, so an understandable discomfort related to the question could be related to recognizing their own lack of focus on marginalized users. Still, the results on this item should be analyzed with care due to the input from the informants on relevance.

	Never	Rarely	Sometimes	Often	Always	Percentage of answer
Colourblind	2:5 (40%)	1:5 (20%)			2:5 (40%)	100%
Blind	1:5 (20%)	2:5 (40%)			2:5 (40%)	100%
Visually impaired	2:5 (40%)	1:5 (20%)			2:5 (40%)	100%
Elderly	2:5 (40%)		2:5 (40%)	1:5 (20%)		100%
Elderly: older than 80	2:5 (40%)		1:5 (20%)	2:5 (40%)		100%
Cognitive impairments	3:5 (60%)	1:5 (20%)	1:5 (20%)			100%

Mental disorders	1:5 (20%)	1:5 (20%)	2:5 (40%)	1:5 (20%)		100%
Foreign language	1:5 (20%)		1:5 (20%)	1:5 (20%)	2:5 (40%)	100%
First-generation immigrants from non-western countries	3:5 (60%)	1:5 (20%)			1:5 (20%)	100%
Motor disabilities	3:5 (60%)	1:5 (20%)	1:5 (20%)			100%
Reading and writing difficulties	3:5 (60%)	1:5 (20%)	1:5 (20%)			100%
Children and youth	2:5 (40%)		1:5 (20%)	2:5 (40%)		100%
People who are unemployed	1:5 (20%)	1:5 (20%)	1:5 (20%)	2:5 (40%)		100%
Temporary disabled	3:5 (60%)	1:5 (20%)		1:5 (20%)		100%
ADHD and other concentration difficulties	2:5 (40%)	1:5 (20%)	1:5 (20%)	1:5 (20%)		100%
CFS / ME (Chronic Fatigue Syndrome)	4:5(80%)	1:5 (20%)				100%

Table 10: Focus given to marginalized users

The informants were also questioned *«How would you work in relation to universal design if you were free to choose methods and procedures? ».* Here, four out of five informants agreed that they would have focused more on special needs, either by mapping out special needs or involving persons with special needs actively throughout projects. Two informants further said that it would be practical if they could gather a test group with people with special needs that they could contact for different projects, or allied themselves with organizations such "blindeforbundet" (The Norwegian blind associations). As such, there seemed to be an increasing reflection related to the value of designing inclusive services throughout the interviews.

> *"You understand in a completely different way when you know someone with the challenges." -Informant 5*

4.2.5 Promoting Universal Design in the Service Design Discipline

The methods and processes used to day seems to be efficient for the service designers, but some of them mentions that it would be nice with some information's or simple tools on how they can include universal design in their projects. Four of the five informants expressed a larger interest in the thesis topic, and they proposed different efforts they believ would promote universal design in service design. The last informant gave an impression of not

really understanding why this subject needed research, and held the perspective that universal design is someone else's responsibility. She also mentioned that universal design comes naturally into the project whenever this is needed.

Still, the need to more explicitly define what universal design entails within service design was mentioned by all the five informants. Three informants state this should be addresses in service design educations. Two of the informants who works as consultants mention that the service providers (their customers) need education on the importance of universal design. Without focus from the customer they express there is little the designers can do, although Informant 1 said: "*The customer decides, but we fight for professional integrity. We can say no, we do not do this*". More laws and regulations are further proposed as something that would help increase knowledge and make the service providers use more resources on universal design. Increased resources are also one of the elements the informants stress, as to include more work for universal design they need more time to do it, and it must be included from the start of the project.

One informant thinks that there is a need for higher awareness and focus in the service design community. For example, discussions with colleagues about the subject could increase awareness. All the informants mentioned they would increase their focus on universal design because of the interview study, and that they would talk with their colleagues about it. One informant said that she and a colleague had just discussed universal design in service design, and that they would have an increased focus on this in future work and within the company, but she did not know how they would proceed. More specific methods or tool to address the topic was suggested.

4.2.6 Summary of interviews

All the interview study informants have worked on projects that target the public. The informants include the general user in their projects, and focus on understanding user needs - however marginalized user group focus is lacking. All informants agree that universal design related to service design is not something they have knowledge of, or focus on, today. Although it varied to what degree they thought that it is their responsibility to increase that knowledge, all of them had thoughts about what needs to be done to increase the awareness of universal design in service design. Methods utilized in service design project seem to be selected dependent on each specific project's aims and resources. It seems that the informants have freedom to choose the approach and methods they consider most sufficient in each

project. Four of the five informants expressed an interest in the thesis topic, and they welcome more knowledge and guidance on how to ensure inclusiveness in their work. As such, they were perceived as positive to universal design, but did not have an awareness of universal design in service design today. They expressed they would appreciate a clearer definition of universal design within service design, increased competence and resources.

4.3 Comparison of Studies

The awareness of universal design is in general low in the two studies. None of the informants focuses on universal design in their service design work, and their self-rating in universal design in service design is mediocre. However, even though their everyday awareness is low, four of five express a positive attitude towards the focus of the thesis and future guidance for inclusive services. The literature paints a more positive picture of the degree of awareness on universal design in service design. Here, 23% mentions catering to users with special needs. Still, none of them emphasize universal design aspects or have a clear focus on inclusiveness in their projects. Thus, the findings indicate inclusive service design aspects are not part of current method or process focuses.

In the interviews, the informants were asked to rate how often they used different methods. In this item, five categories for frequency of method-use were used, as the fitting level of detail was unknown. These where: never, rarely, sometimes, often and always. However, when the informants were rating the frequency of method usage, they had difficulties separating the categories *never* and *rarely*, as well as the categories *often* and *always*. Therefore, *never* and *rarely* has been re-categorized as *Never (N),* and *often* and *always* as *Always (A)*.

In the literature study, the occurrence has been limited to a *yes* or *no* question of usage, as there is no opportunity to ask for the frequency of use. Table 11 summarize and compare method use findings. "Mentioned" is used to display how many articles that use a method and how many informants use a method in each of the frequency of use categories. Note that since the interviews were conducted first, the methods from the interviews have been the basis for the comparison in Table 11. The methods documented in the literature study that are not included in the table are: field trial, walkthrough, usability test and pilot test. As previously described, these were not mentioned in the open question on method use in the interviews. If the literature study had been conducted first, all these methods would have been included in question 5 in the interview guide (Appendix C).

| Method | Interview (n=5) | | Literature (n=13) |
	Frequency of use	Mentioned	Mentioned
Interview	High	5:5	10:13 (76%)
	Medium	0:5	
	Low	0:5	
Observation	H	3:5	6:13 (46%)
	M	0:5	
	L	2:5	
Workshop	H	5:5	2:13 (15%)
	M	0:5	
	L	0:5	
Blueprint	H	1:5	1:13 (7%)
	M	4:5	
	L	0:5	
Survey	H	0:5	3:13 (23%)
	M	2:5	
	L	3:5	
Sketching	H	5:5	2:13 (15%)
	M	0:5	
	L	0:5	
Ecology map	H	3:5	1:13 (7%)
	M	1:5	
	L	1:5	
Marked research	H	0:5	1:13 (7%)
	M	3:5	
	L	2:5	
Statistical analyzes	H	0:5	0:13 (0%)
	M	2:5	
	L	3:5	
Personas	H	2:5	1:13 (7%)
	M	0:5	
	L	3:5	
Scenario (user stories)	H	5:5	3:13 (23%)
	M	0:5	
	L	0:5	
Customer Journey	H	5:5	3:13 (23%)
	M	0:5	
	L	0:5	
Storyboard	H	2:5	0:13 (0%)
	M	3:5	
	L	0:5	
Prototyping	H	5:5	2:13 (15%)
	M	0:5	
	L	0:5	

Guerrilla test	H	5:5	0:13 (0%)
	M	0:5	
	L	0:5	
Heuristic evaluation	H	3:5	1:13 (7%)
	M	1:5	
	L	1:5	
Eye tracking	H	0:5	0:13 (0%)
	M	0:5	
	L	5:5	
Automatic test of code	H	0:5	0:13 (0%)
	M	0:5	
	L	5:5	

Table 11: Comparison on method usage in interview and literature.

Interview and observation is the only methods that are used often regarding to both interview and literature study. The informants say that they always use interview in some way, and this is the most repeated method in the literature, observation appears with a slightly less frequency in both. Further, only three other methods have a clear connection between the two study, this is *Statistical analysis, Eye tracking* and *Automatic test of code* who do not appear in any of the studies. The rest are not coherent in the studies, for example; all five informants said that they always used Guerrilla test, but this do not occur in any of the articles.

When considering the methods used, there is not high coherent between interview and literature study. However, when considering the overall process approach, more similarities occur. When asked if the informants prefer qualitative or quantitative methods all the informants are very clear that they prefer qualitative. This was also repeating in the literature as eleven out of thirteen mentions that they have used qualitative methods or analyses. All the articles also document more than one method used, this also are a trademark for qualitative research(McLeod, 2008).

Statement	Answer (n=5)
I prefer qualitative methods that give me proximity to users, profound knowledge and rich insight.	5:5
I prefer quantitative methods that give me an overview, wide scope and representative information	0:5

Table 12: Statement from informants on use of qualitative or quantitative research.

Related to design process approaches, co-creation was an important theme in the literature study, mentioned by 61%. Practitioners did not emphasize co-creation in the interview study, although, all informants mentioned that all input from users are appreciated and is as highly regarded as input from other designers. When the frequency were eight out of thirteen in the

literature study and it seems like an important aspect of service design, it is interesting why it did not appear as a specific theme in any of the interviews.

4.3.1 Summary of Comparison:

Both the interview study and the literature study show that people working with service design seeks to get an understanding of peoples need, and they work hard to make useful and user-friendly solutions. The findings can be interpreted as service designers seeks to reach an in-depth understanding of user aspects, such as needs, usage patterns, touchpoint utilization and service experiences. Further, interview and observations are the only fully established methods commonly utilized in service design projects, and those methods are being selected and adjusted to fit the specific projects as the designers see fit. However, universal design awareness is lacking both in literature and in practice, and as such the hypothesis is that inclusive aspects are generally not embedded into mainstream service design methodology.

5. Discussion

This chapter discusses the findings relevant to research questions asked, as well as reflections on the methods used and findings. Last limitations on the study are addressed.

5.1 Lacking Awareness of Universal Design

Related to the first research question on too what degree is there an awareness of universal design in current service design methodology and practices, findings reveal that the degree of awareness of universal design in service design is low. Both the interview study and the literature study show that although universal design awareness is not completely absent, as there are some thoughts and mentions on universal design in the field of service design, the degree to which universal design is included in service design projects is lacking. Universal- or inclusive design is not mentioned terms in any of the articles in the literature study, and none of the informants have a clear perception on what their responsibility regarding the matter should be. The informants also don't have an opinion about what universal design in service design should entail. Marginalized user groups do not receive focus, and there does not seem to be awareness on whether to include edge-case users within the target user group, or whether the finalized service is overall inclusive across touchpoints.

5.2 Promoting Universal Design in Service Design

Related to the second question, in what ways can this information contribute to strengthen the awareness of universal design in the field of service design? the findings point to 6 possible strategies to promote universal design. These are visualized in Figure 5.

Figure 5: 6 strategies to promote inclusive service design

5.2.1 Increasing Focus through Legislation

This study highlights the need for a stronger emphasis and focus on universal design in service design, if inclusive services are the goal. Service design is relevant in many aspects in the society and includes aspects from many disciplines, and there is reason to assume that the growth of service design will continue to increase (Norlie & Nordvik, 2012). The importance of promoting universal design on a societal level is clearly stated in current legislation, and is argued for both from socio-economical and personal needs points of view. However, it seems the current focus is on specific touchpoints within services, such as ICT-solutions, and not related to the field of service design and development. Many of the projects that service designers work with are digital services. Digital solutions such as webpages and application have their own legislation (W3C, 2008) and it seems like a common perception that universal design regarding digital solution are well taken care of and are the responsibility to someone else than the service designer. However, many services need more than digital touchpoints to work. For example, NAV (The labor and welfare service in Norway) have many services that can be utilized on their webpage. Still, they need psychical offices, so people can come and

talk to someone face to face. Likewise, the transportation sector has applications for tickets, but people still need to use the buses or trains, and the platforms to get to these. The point is, even though someone has the responsibility for some part does not mean that the whole service is universally designed. As such, the current legislation and guidelines for universal design may be insufficient.

Firstly, the goal to make Norway a universally design society by 2025 should again be in the governments agenda. The fact that this goal was not a part of the government's action plan for universal design 2015-2019 is confusing (Barne og Likestillingsdepertementet, 2016), it is a step back. Norway are ahead of many other countries regarding universal design, but we could be even better if more resources would be granted to this purpose.

5.2.2 Awareness and Responsibility

If universal design is included from the start of a project, the need for re-design later will be avoided. This thesis suggests that the service designer could have the overall responsibility to understand all touchpoints and decide what level of universal design each one needs to offer for the service to be inclusive overall. Service designers don't necessarily need to have the direct responsibility for all touchpoints regarding universal design, but an overall universal design focus would be beneficial for new service development and re-design of current services.

There is a need for a definition for what universal design in service design methodology is. A common understanding on what the term represents, and view on what a service designer's responsibility is. The informants all mentioned that they would have more focus on the subject, just on the accord of the interview study. Thus, it is considered that it would beneficial to make discussions in the academic community to increase the awareness. This could be done by arranging after work happenings and invite people that work in the field. Further, arranging workshops with universal design experts and service designers would be very interesting.

5.2.3 Service Design Methodology

The methods that are commonly used both in real life projects (based on the interview study) and in the literature (based on the literature study) seems well suited to discover users' needs and wishes. Both interviews and observations, which are the most commonly used, are qualitative methods that are known to provide a deeper understanding of the phenomena studied. What emerges as a lacking factor when addressing the need for universal design, is

which users that are included in these methods. There is a lack of focus and attention on including people with special needs, and a lack of checkpoints that address different special needs.

It was pointed out in the interview study that universal design comes naturally in some projects, but how can the designer know that the service is universally designed if it isn't measured, or tested with the correct users? Both the interview study and literature study give the impression that when working with service design project, the designers have a freedom to choose methods and approaches that the designer thinks are most fitting. This is positive in one way, because the methods can be customized for each individual project. On the other hand, considering universal design, this may be negative. To make sure that universal design is in focus, the need for specific methods or the focus on marginalized user groups needs to be included in the process in some way. To improve service design methodology 3 suggestions follows:

Guideline or tools: Guidelines to remember different special needs, maybe a checklist that the designer can use as a tool to remember different needs. Three of the informants pointed out that the list of users that they were asked to rate, would be a good aid to remember different user groups. Further, one informant suggested that a webpage could be sufficient as a tool, and maybe a webpage could be good medium to share the topic from this thesis. A webpage where Service- and Universal design methodology are discussed, and examples on how to address universal design in different services. The webpage could be an interactive site where designers from different countries could discuss, and such, co-create measures to develop inclusive service design.

Touchpoints: Although blueprint has not been listed as a commonly used method, all the informants used some approach to map out the service, with all the touchpoints. After the mapping, the designers should address each touchpoint and discuss: *what must be done to assure universal design here, who do we need to consider and who have that responsibility in the project-team?*

Measure: After a service is delivered, follow-up questions are needed to see the if the project was a success. Does the service get implemented? If not, why? If yes, does it work to a desired satisfaction? Do we, or the service provider, know anyone with special needs that have used the service and can give some feedback?

5.2.4 Users in Focus

The methods and processes identified both from literature and industry practices have a high degree of end-user inclusion and strong user-centered focuses. It does not seem to be the case that the methods in themselves are problematic for integrating universal design into the service design methodology, but rather the users included. All informants, and all the articles have used general users from their target groups in their projects. The informants say that they often wish to get users with a greater variety of demographic, for example age and gender. In most projects these are still only able-bodied users. As such, any special needs in the target user group can be difficult to discover.

A checklist or tool (as mentioned in section 5.2.3), should be a good help to remember and include special needs. However, to *think* about marginalized users will not always be sufficiently. To really understand the users, they need to be directly included in some part of the projects, preferably in all stages. Harder and Begnum (2017) mentions seven principles for inclusive design process and states this as one of them: *focus on users with disabilities early, and throughout the entire design process.(Harder & Begnum, 2017, p. 11)* Although, this can be challenging due to time-limit and other resources.

Dependent on the projects size, at least one method, where users are directly used, should include user(s) with special needs. For example: if a project starts with four interviews, or observations of users, one of these should be with a marginalized user. If this proves difficult, family and friend can be a good solution. Family often know the needs, and difficulties that marginalized users experience. They may not be able to address the problems in the same manner as someone who experience them personally, but they will indeed have a greater understanding than others, for example the designer themselves. Further, a development of new, or re-design of exciting method cards could be used to make methods that ensure the inclusion of people with disabilities. Method cards from InnoMed, IDEO and Alexandra have several methods that could be altered to fit a new stack of method cards, that have a high awareness of universal design. InnoMeds "perspective glasses" is a method where the participants should "put on the glasses" to other members of the team or organization. The aim is to get a wider perception on the subject investigated, and be able to see things from others point of view. This could be re-designed to have focus on users with special need, for example to put on the glasses to someone that use a wheelchair. This could help the designers to get a better understanding in special needs, but it could also be efficient for companies, and work situations.

5.2.5 Service Design Project Expertise

Finally, it seems the universal design knowledge and awareness in service design is very low. As van Velsen et al. (2009) mention, a team need to have people that are experts in their field. Currently, universal design expertise is not necessarily regarded as important in the field of service design. This thesis proposes to ensure at least one person on each service design team creating services targeting the public have universal design expertise. Harder and Begnum (2017) discovered through their study that it is uncommon to address universal design as someone's main discipline. Universal design expertise is more commonly seen as a natural part of functional design. Someone on a design team need to have responsibility and universal design expertise will benefit all projects. The thesis suggests service designers should take the overall responsibility of inclusiveness, to check that universal design have been considered in all touchpoints. To include universal design in projects, more resources are needed. This may seem unnecessary for some service providers, however, resources on universal design early in the project will most likely ensure that there will be no need for resources used on redesign later.

5.2.6 Knowledge and Education

In addition to project expertise, universal design should be a topic that all members of a project team have knowledge of, so that the team is able to address the issue in plenum in the early stages of the projects as described in 5.2.2. The focus on universal design should be included in service design education. Both the Oslo school of architecture and design and Kristiania university college offers service design education. None of the informants in the interview study had learned about universal design through their service design studies. A closer look at the educations to see if there are any degree of education regarding universal design would be interesting.

A different education, is to educate the customer. The informants that work as consultant all wanted the universal design demand to come from the customer. If the customer has a higher knowledge of the benefits and laws and regulations they would be more likely to ask for this in projects. To achieve this, the service design firms could teach the customers before projects, or arrange workshops or happenings where the topic is on the agenda.

5.3 Limitations of the Study

The lack of background information has been a stressful factor throughout this study. The study started with no documentation or evidence that this was a subject that needed research. A lot of resources have been used to search for information, using different search terms and different databases. Santana et al. (2017) is the first researcher that have directly addressed the subject investigated, and his article was not publishes before November 2017. However, this article is very welcomed as he states some of the same issues that this thesis has stumbled upon: *"We did not find any papers that dealt with service development process for universal design in general"*

Further, both the interview study and literature study should have had a larger sample to make sure that the overall study had higher validity. The findings in these methods are therefore not considered generalizable as the sample is too limited in size. A larger sample would be preferable. One other solution could have been, if the time had been efficient, to utilize a third method. This would be conducted based on the finding from the two studies described and would help to state if the finding is reliable. It would be interesting to use observations, or to conduct a focus group with service designers. Since the subject are under-researched, and there is no definition in what universal design in service design is, it would have been very interesting to see what a group of service designers would have discussed in a group interview. They would have engaged each other, and maybe come up with some interesting thoughts and ideas on how address the subject further.

In hindsight, regarding the literature study, a narrower inclusion of year should be used. There has been rapid development in the field of service design the last years, and it may be that the oldest articles included in the sample are not as relevant. A limitation to the last seven years (2010-2017) is assumed to be a better choice, to assure the relevance of projects described in the articles.

Since the interview was of exploratory nature, little suggesting for definitions and conclusions had been considered before the interview was conducted. The idea was to let the informants tell their thoughts on what universal design in service design could mean, but this resulted to be futile as the informants never had heard of, or discussed it before. Some own thoughts or propositions on the matter could have resulted in other conversations and results. Further, many questions could be very interesting to ask, for example regarding measures after delivery and how their project groups most often are constructed.

As the selection for both interview and literature study was desired to be higher, more research is suggested to assure that the findings are valid.

6. Conclusion

The overall aims for this thesis was to investigate aspects of service design methodology that are under-researched in the literature. As the field of service design grows and is more included in different aspects of the society, more research is needed. Service design methodology is used in many different kinds of projects, and are often used to address complex problems. Norway seeks to include citizen in everyday social life, and to fight discrimination. Thus, the government have a high focus on universal design. However, the focus on universal design aspects in service design is lacking. Through an exploratory study, including interviews and literature search, the study aimed to target this issue and investigate the degree of awareness of universal design in current service design practices, and to suggest ways that this information can contribute to strengthen the awareness further. Service designers have responsibility for the holistic view of the service and need guidance on how to address universal design in all touchpoints through the customer journey.

The findings in the study shows that the awareness is lacking, and that service designers is Norway have knowledge about universal design, but do not include universal design aspects in their work with service design. The study also found that marginalized users are not included in today's service design projects. In the literature, marginalized users are addressed vaguely, but there is no mention of universal- or inclusive design. However, the methods and processes that are used are commonly qualitative and seeks to understand the user, and to develop services that contributes to positive user experience. The user is the service designer's material and are highly regarded as co-creators in many service design projects. This applies to findings from both interview and literature study.

Based on the findings, 6 possible strategies are suggested: *Service Design Project Expertise, Knowledge and Education, Users in Focus, Increasing Focus through Legislation, Awareness and Responsibility, Service Design Methodology.* These are suggestions that are regarded to increase the awareness and knowledge about universal design in service design.

6.1 Further work

Through this study, many suggestions for future work has emerged. One important fact is the need for more research as the field is lacking attention from the academic community.

It would be useful to establish an academic definition for universal design in service design, or some guidelines on what this address. A focus group and/or workshop with service

designers, and someone with expertise on universal design would be interesting. This could result in many interesting findings, and would be beneficial in many aspect of this thesis, not only to seek a definition. Overall, more research in real life project are preferable, maybe observation and more in-depth interviews, with a higher sample than this thesis could provide. Further, the creation of a webpage or some other simple tool could be developed and tested with service designers.

This thesis has not investigated todays status regarding education in service design. Are universal design aspects discussed in education to day? How can this be implemented in courses, or is there need for a need for a course in service design education.

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Appenix A: Mail to companies (Norwegian)

Tittel: Intervjudeltagere til masteroppgave om tjenestedesign.

Hei,

Jeg leter etter ansatte som jobber med tjenestedesign og som kan stille til intervju i forbindelse med en masteroppgave, og håper du kan hjelpe meg med det.

Jeg heter Oda Lintho Bue og jobber nå med masteroppgave innen interaksjonsdesign ved NTNU Gjøvik. Temaet i oppgaven min er tjenestedesign og universell utforming.

Intervjuet vil ta omtrent en time og de som deltar vil være anonyme. Spørsmålene i intervjuet omhandler metoder, brukergrupper og universell utforming innen tjenestedesign. Jeg ønsker å gjennomføre intervjuene mellom 20 Mars og 28 April. Håper denne mailen kan sendes videre til personer som muligens kan delta i prosjektet mitt.

Ved spørsmål kan både jeg og min veileder kontaktes.

Veileder på prosjektet er Miriam Nes Begnum,

miriam.begnum@ntnu.no

På forhånd, takk!

Med vennlig hilsen,

Oda Lintho Bue

99030942

lintho.oda@gmail.com

Informasjon om deltakelse i forskningsprosjektet

”Inclusive Service Design: current practices and future recommendations”

Bakgrunn og formål

Tjenestedesign har de siste åren fått økende fokus blant mange bedrifter. Med dagens hyppige utvikling og digitalisering er det mange som ser fordelene ved å inkludere tjenestedesign i prosjekter. Siden tjenestedesign som metodikk er relativt nytt så finnes det lite forskning rundt temaet.

Krav om universell utforming er blant annet nedskrevet i flere norske lover. Til tross for dette er det lite å finne i litteraturen om universell utforming innen tjenestedesign. Denne undersøkelsen vil bidra til å se hvordan universell utforming og tilgjengelighet ivaretas i prosjekter innen tjenestedesign. Intervjustudien gjøres i forbindelse med en masteroppgave i Interaksjonsdesign på NTNU i Gjøvik. Deler av datagrunnlaget vil også brukes av veileder på prosjektet, i forbindelse med hennes PhD studier

Hva innebærer deltakelse i denne studien?

Deltakelse i studien vil innebære gjennomføring av et personlig intervju på ca. èn time. Intervjuer vil notere underveis, og det vil bli gjort lydopptak av intervjuet *dersom* det gis tillatelse til dette av respondenten.

Hva skjer med informasjonen om deg?

Alle personopplysninger vil bli behandlet konfidensielt. Data fra intervjuet vil kun være tilgjengelig for intervjuer og studentens veileder ved NTNU Gjøvik. Eventuelle lydopptak blir lagret med passordbeskyttelse, og navn på deltakere holdes adskilt fra datagrunnlaget og lydopptak. Masteroppgave som inneholder aggregerte data fra intervjuene kan bli publisert og offentlig tilgjengelig. Informasjonen i denne oppgaven vil ikke kunne spores tilbake til deg eller andre enkeltpersoner dersom du ikke ønsker det, da ingen navn på enkeltpersoner vil

være med i denne oppgaven uten at skriftlig samtykke er gitt. Navn på bedrifter som deltar i studien kan bli publisert dersom dette er ønskelig, og godkjennes av de aktuelle bedriftene. Denne intervjustudien skal etter planen avsluttes desember 2017. Alle notater, lydopptak og deltakerlister anonymiseres, og all personidentifiserende informasjon slettes innen utgangen av 2018, og senest innen 31. januar 2019.

Frivillig deltakelse

Det er helt frivillig å delta i denne studien, og du kan når som helst trekke ditt samtykke uten å oppgi noen grunn. Dersom du trekker deg, vil alle opplysninger om deg bli anonymisert og lydopptak slettet. Dersom du har spørsmål til studien, er du velkommen til å ta kontakt med intervjuer Oda Lintho Bue, tlf. 99030942, odalb@stud.ntnu.no, eller veileder Miriam Nes Begnum, tlf. 97726774, miriam.begnum@ntnu.no.

Studien er meldt til Personvernombudet for forskning, Norsk samfunnsvitenskapelig datatjeneste AS.

Samtykke til deltakelse i forskningsprosjektet

☐ Jeg har mottatt informasjon om denne studien.

☐ Jeg samtykker til at det blir foretatt lydopptak av intervjuet.

☐ Jeg samtykker til at data om meg **ikke** blir umiddelbart anonymisert

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Navn (Blokkbokstaver)

Signatur

Sted og dato

Appenix C: Interview guide (Norwegian)

Universell utforming innen tjenestedesign

Denne undersøkelsen retter seg mot deg som jobber med tjenestedesign. (Informasjonsskriv presenteres, samtykkeerklæring signeres og, hvis opptak er godtatt starter opptak. Ønsker å takkes ved navn/arbeidssted i artikkel?)

Den første og største delen omhandler universell utforming, metoder og brukergrupper.

Dato:

Prosjekt/Firma:

1. **Hvor lenge har du jobbet med tjenestedesign? Rund opp antall år.**

2. **Hva gjorde at du begynte å jobbe med tjenestedesign?**

3. **Hvordan vurderer du din egen kompetanse med hensyn til tjenestedesign?** På en skala fra 1-7, der 1 er mangelfull og 7 er fremragende.

Mangelfull   Fremragende

     1   2   3   4   5   6   7

4. **Hvordan vurderer du din egen kompetanse med hensyn til universell utforming innen tjenestedesign?** På en skala fra 1-7, der 1 er mangelfull og 7 er fremragende.

Mangelfull   Fremragende

       1   2   3   4   5   6   7

5. **Hvilke metoder benytter du deg av i ditt arbeid?**

	Aldri	Sjelden	Innimellom	Ofte	Alltid
Blueprints					
Intervjuer Type:					
Intervjuer Type:					
Observasjoner Type:					
Observasjoner Type:					
Ecology map					
Spørreundersøkelser					
Markedsundersøkelser					
Statistiske analyser					

Personas		58			
Scenarioer eller brukerhistorier (user stories)					
Brukerreiser (user journeys)					
Smidig metodikk					
Storyboard					
Workshops					
Skissering					
Prototyping					
Brukere gir uformelle tilbakemeldinger					
Formative og utforskende brukertester (fokus på å avdekke problemer)					
Summative og vurderende brukertester (fokus på å måle måloppnåelse)					
Brukertesting i laboratorie/testmiljø					
Brukertesting i reell brukssituasjon/kontekst					
Ekspertinspeksjoner (f.eks. heuristisk evaluering og tilgjengelighetssjekk)					
Eye tracking					

Automatisk testing av kode					
Annet, spesifiser:					
Annet, spesifiser:					
Annet, spesifiser:					

6. **Hva påvirker hvilke metoder du benytter?**

7. **Hvordan ville du jobbet i forhold til universell utforming dersom du sto helt fritt til å velge metoder og fremgangsmåte?**

8. **I arbeidet med et vellykket prosjekt hvordan jobbet dere med å ivareta universell utforming?**

9. **I arbeidet med et vellykket prosjekt hvordan jobbet dere med å inkludere sluttbrukere?**

Oppfølgingsspørsmål:

Hva gjorde dette prosjektet vellykket tror du?

Har du vært med på andre vellykkede eller mislykkede prosjekter?

Hva gjorde dette/disse prosjektet vellykket/mislykket tror du?

10. **Hvilket utsagn er du aller mest enig i?**
    a. Jeg foretrekker kvalitative metoder, som gir meg nærhet til brukere, dybdekunnskap og rik innsikt.
    b. Jeg foretrekker kvantitative metoder, som gir meg oversikt kunnskap, stort gyldighetsområde og representativ informasjon.

11. **Fokuserer du på noen av følgende brukergrupper i ditt arbeid?**

	Aldri	Sjelden	Innimellom	Ofte	Alltid
Fargeblinde					
Blinde					
Svaksynte					
Eldre					
Eldre over 80 år					
Kognitive funksjonsnedsettelser					
Psykiske lidelser					
Fremmedspråklige					
Førstegenerasjons innvandrere fra ikke-vestlige land					
Motoriske funksjonsnedsettelser					
Lese- og skrivevansker					
Barn og unge					
Personer utenfor arbeidslivet					
Midlertidig funksjonshemmede					
AD/HD og andre konsentrasjonsvansker					
CFS/ME (Kronisk utmattelsessyndom)					

12. **Hvis du fokuserer på andre brukergrupper, kan du liste opp disse og hvor ofte de er i fokus?**

Oppfølgingsspørsmål:

Kan du fortelle litt om hvordan dere rekrutterer brukere? Hvordan kommer dere i kontakt med dem?

13. **Er det noe du opplever som særlig *fremmer* realisering av universell utforming innen tjenestedesign?**

14. **Er det noe du opplever som særlig *hemmer* realisering av universell utforming innen tjenestedesign?**

Til sist ønsker vi litt bakgrunnsinformasjon om deg:

15. **Hva er din faglige bakgrunn?**
   - ☐ Informatikk/Teknologi
   - ☐ Design/Interaksjonsdesign
   - ☐ Markedsføring/Media
   - ☐ Annet:

   _____

   ___

16. **Hva er din alder?**
   - ☐ Under 30 år
   - ☐ 30-39 år
   - ☐ 40-49 år
   - ☐ 50-59 år
   - ☐ Over 60 år

Har du kommentarer eller innspill til denne undersøkelsen?

Tusen takk for din deltakelse!