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Digital Nudging in the Public Sector in Norway

Master's thesis in Informatics

Supervisor: Babak A. Farshchian

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Abstract

Public organizations are frequently influencing their users' decisions without the knowledge of neither the users nor the organizations themselves. As all interface design will affect the user, this is impossible to avoid. There is a fine line between influencing and manipulating in relation to digital nudging. How can the public sector in Norway influence users through digital nudging and still maintain the trust-based relationship?

To benefit from use of digital nudging it is important to establish a high level of awareness and practical tools such as design guidelines. The aim of this research is thereby to understand and increase the level of awareness regarding digital nudging and how it can best be used in the public sector in Norway. Two objectives were established: (1) analyze the level of awareness and utilization of digital nudging in the public sector in Norway and (2) create guidelines adapted for the public sector that can be applied when implementing digital nudging. This was accomplished by conducting a case study of a product area in NAV, one of the largest organizations in the public sector in Norway. The product area *Illness in the Family* was chosen to act as a representative for the public sector. The data collection included interviews, documents, and digital artifacts. The analyzed data were used to develop the mentioned guidelines for digital nudging in the Norwegian public sector.

The results obtained showed that unconscious nudging is present in NAV, and that there are unclaritys regarding the concepts of nudging and digital nudging. It is further concluded that the types of digital nudging most relevant for the public sector in Norway are personalized informational nudges that nudge in a pro-self direction. This is based on the expectations of the users and the factors the public sector must consider. The guidelines offer a more general perspective, designed to fit the core values of the public sector in Norway. The guidelines concern transparency, possible discrimination and the importance of user insight.

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Sammendrag

Offentlige organisasjoner påvirker brukernes beslutninger i flere sammenhenger. Dette gjøres uten at hverken bruker eller organisasjonen er klar over det. Eftersom all grensesnittdesign påvirker brukeren, er dette umulig å unngå. Det er en smal grense mellom å påvirke og å manipulere når det snakkes om digital "nudging" (dulting). Hvordan kan offentlig sektor i Norge påvirke brukere gjennom digital "nudging" og samtidig opprettholde et tillitsbasert forhold?

For å kunne benytte digital "nudging" best mulig er det viktig å ha et høyt bevissthetsnivå og praktiske verktøy som retningslinjer for design. Målet med dette studiet er derfor å forstå, samt og øke, bevissthetsnivået rundt digital "nudging" i offentlig sektor. For å oppnå dette, ble det etablert to målsetninger: (1) analysere bevissthetsnivået for bruk av digital "nudging" i offentlig sektor i Norge og (2) lage retningslinjer tilpasset dette. Dette ble oppnådd ved å gjennomføre en casestudie av et produktområde i NAV, en av de største organisasjonene i offentlig sektor i Norge. Produktområdet "sykdom i familien" ble valgt som representant for offentlig sektor. Datainnsamlingen inkluderte intervjuer, dokumenter og observasjoner fra digitale plattformer. Resultatene fra analysene ble brukt til å utvikle nevnte retningslinjene for digital "nudging" i offentlig sektor i Norge.

Resultatene viste at ubevisst "nudging" eksisterer i NAV og i offentlig sektor, og at det er uklarerhet rundt konseptet digital "nudging". Offentlig sektor må ta hensyn til flere relevante faktorer når de skal implementere digital nudging. Konklusjonen er at personifiserte informasjonsbaserte "nudges" som leder brukeren mot en "pro-self" avgjørelse, er den mest relevante formen "nudging" for offentlig sektor. Dette er basert på brukernes forventninger og de hensyn offentlig sektor må ta. Retningslinjene har et generelt perspektiv og er laget og tilpasset kjerneverdiene til offentlig sektor i Norge. Retningslinjene omhandler åpenhet, mulig diskriminering og viktigheten av brukerinnsikt.

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Preface

To complete our 18 years of education, we are finishing on a high note by finalizing this masters thesis in computer science. The thesis was written as an Informatics Postgraduate Thesis (IT3901) at the Norwegian University of Science and Technology (NTNU).

First of all, we would like to thank each other for the cooperation which has made the work both educational, interesting and (mostly) fun. We would also like to thank our supervisor, Babak A. Farshchian, who has helped us tremendously with advice and guiding us back on the right track when lost. Further, this project could not have been possible to conduct without everyone who participated in the interviews, and they deserve a big thank you.

We would also like to thank all of our friends and family who have listened to us complain about the work load and us discussing nudging during lunch breaks and at parties. A special thank you to everyone who have proofread the thesis.

We hope you enjoy your reading.

Ingrid Asklund Larssen,
Heidi Lohne Brække

Trondheim, june 1, 2021

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Abbreviations

AI - Artificial Intelligence

AR - Augmented Reality

DNN - Danish Nudging Network

DPA - The Norwegian Data Protection Authority

EEA - European Economic Area

ENISA - The European Union Agency for Network and Information Security

EU - The European Union

GDPR - The General Data Protection Regulation

HCI - Human-computer Interaction

ICT - Information and Communication Technology

LO - The Norwegian Confederation of Trade Unions (Landsorganisasjonen i Norge)

NHO - The confederation of Norwegian Enterprise (Næringslivets Hovedorganisasjon)

NSD - Norwegian Center of Research Data (Norsk senter for forskningsdata)

RQ - Research Question

TEN - The European Nudging Network

UD - Universal Design

VR - Virtual Reality

WHO - World Health Organization

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1 Introduction

The following introductory chapter will provide background for the selected problem, as well as an explanation of the aim, objectives and research questions that provided direction for the work.

1.1 Digital Nudging in the Public Sector

All interface design will somehow affect the user, intended or not. One of the matters it can affect is the user's decision-making, which can lead to behavioral change. Looking at this from a digital perspective, it can be referred to as digital nudging. Digital nudging is a behavioral change policy defined as *"the use of user-interface design elements to guide people's behavior in digital choice environments"* (Weinmann et al. 2016a). Digital nudging can be, for example, gamification, feedback or social influence (Esmark 2019). The concepts of digital nudging was introduced in 2016, and its importance is increasing due to more frequent decision-making in digital environments (Hummel & Maedche 2019). All design related decisions will influence the user's behavior, possibly independently of the designer's intent. It is important that the designers are aware of this, as influencing the user without intent can lead to unplanned and unwanted consequences (Weinmann et al. 2016a). From this follows that unintentional digital nudging is likely present in digital services provided by the public sector. It is also possible that the user is nudged in directions that are desired by neither the public sector nor the user.

Nudging has great potential in itself, and combining digital nudging with Big Data can open doors to a new world of creating choice environments that are extremely powerful, dynamic and persuasive compared to more static nudges, i.e., non-digital nudges. This is because Big Data makes it possible to create personalized nudges. Personalized nudges could make it more difficult for a user to avoid being guided on online platforms (Yeung 2017). Big Data is not only used by the private sector, but also by governing powers. In addition to gathering data themselves, governing powers are secondary beneficiaries of private companies (Sætra 2019).

A user often does not have a perceived choice not to use the digital solutions provided by the public sector in Norway as equivalent services are not offered by other actors. Hence, they have no choice but to be exposed to the digital nudges present in these online solutions. The typical Norwegian citizen may also expect the public sector not to affect its choice in any way, as the level of trust between the citizens and the Norwegian government is high compared to other countries (Christensen et al. 2006). Therefore, the question of which regulations and guidelines the public sector has to follow emerges.

The government in Norway has established several regulations governing when and with whom the public sector shares data (Ministry of Local Government and Modernisation 2019). However, no regulations or guidelines exist concerning how the public sector can utilize digital nudging to guide the population's choices. It can be even more challenging for the public sector compared to the private sector to make the right decisions in this area as it has a higher count of values and goals. The public sector has to consider aspects such as democratic and legal aspects and the common good, as they are responsible for both the citizens and the politicians (Christensen et al. 2009). As there is also a general consensus regarding collective and egalitarian values in Norway (Christensen et al. 2006), relevant guidelines should be in line with these values as well.

The significant impacts that nudging and digital nudging can have on a person's life can be positive. However, it is not given that the effects of the nudging is beneficial for the recipient. One important perspective is to consider whom the nudge serves - does it lead to positive effects for the person being nudged, or is it in favor of the company or organization nudging? These can be two very different things, and it can be challenging to know if a company or an organization attempting to nudge differs between these two.

While there exists research related to nudging and digital nudging in the public sector, no studies focus on awareness in and guidelines adapted for the public sector in Norway. With this and the previously mentioned factors as a base, the primary motivation for this study is to improve the understanding of how behavioral change policies, in this specific case, digital nudging, can be

utilized by the public sector in Norway.

1.2 Scope of Thesis

The aim of this thesis is to understand and increase the level of awareness regarding digital nudging and how it can best be used in the public sector in Norway. From this follows two objectives:

- **Objective 1:** Analyze the level of awareness and utilization of digital nudging in the public sector in Norway.
- **Objective 2:** Create guidelines adapted for the public sector that can be applied when implementing digital nudging in the public sector in Norway.

It is expected that analyzing the level of awareness and utilization can lead to increased awareness. By increasing the awareness in the public sector in Norway, millions of users might be influenced. The analysis can also provide important background concerning how the guidelines should cover the actual needs of the public sector. Providing guidelines for digital nudging adapted to the public sector can make it more feasible to carry out a strategic and systematic approach to the concept and implementation.

Research questions were defined to provide a direction, specify a focus area and concretize the work towards reaching the objectives. The research questions were defined as:

- **RQ1:** What is the level of awareness and utilization of digital nudging in the public sector in Norway?
- **RQ2:** What types of digital nudging are most in line with the values of the public sector in Norway?

The intention of RQ1 is primarily to provide background information on the level of awareness of digital nudging in the public sector. This will contribute directly to reach objective 1. Additionally, it is a base for objective 2. RQ2 is essential to understand the possibilities and restrictions relevant for the public sector that have to be considered when developing guidelines, that is, objective 2. RQ2 concerns not only the relevant types of digital nudging, but also what types of digital nudges that may have the greater potential.

The research questions will be answered through different data collection methods. The first is a literature study. The literature study will establish a conceptual framework. This framework will be used in a case study that will also be conducted. The case study consists of interviews, analyses of online services and documents provided by a selected part of the public sector in Norway, as it would be too extensive to analyze the entire public sector. The data from the analysis will then be generalized to be applicable for the overall public sector in Norway where considered appropriate.

The case study focuses on the department *Illness in the Family* (directly translated from the Norwegian "sykdom i familien") in NAV, the Norwegian Labour and Welfare Administration. Most citizens of Norway will interact with NAV at some point in their lives, as NAV is responsible for many matters, such as social support, retirement and other benefits. NAV is in charge of a third of the state budget, and is one of the largest public organizations in Norway (Aspøy & Berg 2021).

1.3 Report Outline

Chapter 2 will provide background for the study by presenting the results from the literature study. This includes definitions of concepts, related work, laws and regulations that is of relevance, and a presentation of a conceptual framework used in the case study. Chapter 3 will explain the research method. This covers, amongst several topics, data collection methods, and how the case study was

conducted with more specific details. In chapter 4 a description of the case study is given, and chapter 5 presents the results. These results are discussed in chapter 6. Finally, a summation and conclusion of the work is presented in chapter 7. Translations of specific terms used throughout the thesis are presented in appendix A.

2 Background

This chapter provides an overview of the literature and theoretical background relevant to the work conducted in this study. In order to understand digital nudging, it is essential first to understand the concept of nudging in a broader context. Therefore, the following sections will focus on nudging, digital nudging, their implementation, and utilization in the public sector. In addition, concepts and categorization of (digital) nudging relevant to the public sector's approach to it are discussed and defined. Following this is a description of the existing use of nudging and digital nudging in different public sectors and laws that may influence its potential and impact force. The chapter is finalized with a conceptual framework defined for this work.

2.1 Nudging

Sunstein (2014) describes nudging as approaches that steer people in particular directions, but at the same time, does not directly limit their options. Nudging, when performed correctly, is described as libertarian paternalism: *"an approach that preserves freedom of choice but that authorizes both private and public institutions to steer people in directions that will promote their welfare"* (Thaler & Sunstein 2003). However, there is not complete agreement regarding this statement. Nudging is based on psychological research, and it is claimed to be effective because people do not always act rationally. Until recently, it has primarily been discussed in either psychological research or in behavioral economic research, where it is often used in correlation with behavioral insights. Behavioral insight research in economic theory traditionally assumes that a person acts rationally. If this is assumed, then directing people to make choices that are not in compliance with their own rational decisions is not preserving the liberty of choice. Further, nudging can reduce an individual's autonomy and responsibility concerning decision-making (Hausman & Welch 2010). It can additionally result in cognitive biases (White 2011).

Cognitive biases are described as *"cases in which human cognition reliably produces representations that are systematically distorted compared to some aspect of objective reality"* (Haselton et al. 2015). Sætra (2019) argues that nudging is troubling as it is influencing people's behavior and decisions by appealing to subconscious mechanisms. This in contrast to rational persuasion with open and transparent appeals to a person's reasoning. Nudging may involve deception as it implies that the user is unaware that he or she is being nudged (Quigley 2013). This is because the choice environment often influences the heuristics and cognitive biases of the user. On the other hand, those who support the claim that nudging can be defined as libertarian paternalism underlines that as no options are removed, the choice is still up to the user.

Quigley (2013) states that we are constantly being nudged, deliberately or not. The problem is, as he points out, that this constant nudging is not libertarian. He compares nudging to laws, regulations, and restrictions from the government that also influence our behavior. In the case of laws, there is more transparent control. The majority of people are aware of their existence and that they have to be followed. With nudging, the influence is less transparent. Even though all options are still available, influencing people in a deliberate and hidden manner may not reflect liberty and freedom of choice.

Whether a nudge preserves libertarian paternalism might be dependent on how one chooses to categorize and define it. Nudges can be separated based on whether they are pro-social or pro-self. The first focuses on the welfare of the individual, and the latter focuses on social welfare. Hagman et al. (2015) state that pro-self nudges are in line with libertarian paternalism, and pro-social nudges are not. This is because a pro-social nudge considers what is best for everyone, disregarding the direct personal benefit. When categorizing a nudge as pro-self or pro-social, Clavien (2018) suggests a third category: *"selfish goals."* This category might not comply with the nudgee's best interest, despite being based on the beliefs and opinions of the nudgee. To finalize this discussion, it should be emphasized that nudging can in many cases be beneficial. As an example, nudging can lead to more active decision-making. This can be accomplished by presenting parts of the information more accessible and salient (Damgaard & Nielsen 2018). This can be described as informational nudging.

Although digital nudges differ from nudges in many ways, the operative is similar - both work because people do not think rationally and have biases. This means that the previously mentioned aspects will also have relevance in the digital world. As mentioned, the amount of decisions conducted in digital environments has increased. It is therefore believed that the importance of digital nudging is increasing as well (Hummel & Maedche 2019). Further, as digital platforms are experienced by many as containing an overload of choices and something that limits concentration, the need for digital nudging to counteract irrational thinking and bias may be of even more importance in this context.

2.2 Digital Nudging

The most significant difference between nudging and digital nudging is that digital nudging is carried out on digital systems and platforms. As technology has become a substantial part of the everyday life, nudging digitally through websites or apps can be highly effective as it increases the scale of the nudge and speed of implementation in addition to being more cost-efficient (Dhar et al. 2017). This means that digital nudging can reach a higher number of users compared to non-digital nudging. It is also expected that digital nudging will become more widespread in the coming years along with the development and increased use of, for example, wearable technology (for example, smartwatches), VR (Virtual Reality), and AR (Augmented Reality). To further concretize the difference, an example could be beneficial. In a physical make-up store, it is possible to nudge the customer to buy additional products, by placing it close to the register. In the same way, an online make-up store can enhance additional products or have popups asking the customer if they would like to add additional products to their chart before finalizing their purchase.

Digital nudging is defined as *"the use of user-interface design elements to guide people's behavior in digital choice environments. Digital choice environments are user interfaces [...], that require people to make judgments or decisions"* (Weinmann et al. 2016a). Digital choice environments, also called choice architectures, force users to make decisions through actions and are created by choice architects. The user can choose to perform or not to perform an action, and the user's decision could be highly affected by the presentation of the options. Specifically, it can be related to, for example, wording, content, and design modifications (Mirsch et al. 2017). *All* design choices and digital choice environments will in some way affect the user, intentionally or not, and there is no such thing as a neutral way to present options (Weinmann et al. 2016a). This means that there is a chance to digitally nudge the user in a direction that is not deliberate.

Digital nudging is impossible to implement without considering other core concepts that lay the foundation for it. Thus, it is essential to understand the relevant concepts that can impact the development and perception of digital nudging. Therefore, the explanation of digital nudging will continue with an introduction of human-computer interaction (HCI) and persuasive computing. Additionally, it is expected that the digital nudges of the future will be data-driven (Deloitte Center for Government Insights 2020). Therefore, exploring personalized nudging is also relevant.

2.2.1 Human Computer Interaction and Persuasive Computing

Human-computer interaction (HCI) describes the interaction between a user and machines. A user can be one or several people using technology, and the technology is not restricted to computers: it can also be embedded systems, desktop computers, or more extensive computer systems (Dix et al. 2004). As further explained by Dix et al. (2004), HCI also concerns the tasks the users need the technology to accomplish. This presents a new concept: *usability*. The technology should not hinder the user from accomplishing the tasks in any significant way. From this follows that HCI is not only a technological discipline but is also connected to human psychology. When conducting the interdisciplinary work of creating meaningful software, design principles might help achieve high usability, that is, ease of use and efficiency.

Nielsen (1994) has created a set of design principles that over time have become highly established in the field. These design principles are reprinted in Table 1. It is important to actively use these principles to avoid guiding the user in wrong directions because of lack of, for example, consistency

or feedback. Avoiding this is even more crucial when examining the utilization of digital nudging. Although usability and user-friendliness are essential for many platforms, research also suggests that high usability might hinder a user in making informed and deliberate decisions (Sela 2019).

Table 1: Nielsen’s design principles

Principle	Description
Visibility of system status	The design should always keep users informed about what is going on, through appropriate feedback within a reasonable amount of time.
Match between system and the real world	The design should speak the users’ language. Use words, phrases, and concepts familiar to the user, rather than internal jargon. Follow real-world conventions, making information appear in a natural and logical order.
User control and freedom	Users often perform actions by mistake. They need a clearly marked ”emergency exit” to leave the unwanted action without having to go through an extended process.
Consistency and standards	Users should not have to wonder whether different words, situations, or actions mean the same thing. Follow platform and industry conventions.
Error prevention	Good error messages are important, but the best designs carefully prevent problems from occurring in the first place. Either eliminate error-prone conditions or check for them and present users with a confirmation option before they commit to the action.
Recognition rather than recall	Minimize the user’s memory load by making elements, actions, and options visible. The user should not have to remember information from one part of the interface to another. Information required to use the design (e.g. field labels or menu items) should be visible or easily retrievable when needed.
Flexibility and efficiency of use	Shortcuts — hidden from novice users — may speed up the interaction for the expert user such that the design can cater to both inexperienced and experienced users. Allow users to tailor frequent actions.
Aesthetic and minimalist design	Interfaces should not contain information that is irrelevant or rarely needed. Every extra unit of information in an interface competes with the relevant units of information and diminishes their relative visibility.
Help users recognize, diagnose, and recover from errors	Error messages should be expressed in plain language (no error codes), precisely indicate the problem, and constructively suggest a solution.
Help and documentation	It’s best if the system doesn’t need any additional explanation. However, it may be necessary to provide documentation to help users understand how to complete their tasks.

Persuasive computing is an area of HCI that focuses on how computers and digital platforms through interactive technology can change behaviors and attitudes. Persuasive computing can be utilized under several domains, typically where behavior or attitude change could positively affect the user (Fogg 1998). Examples of such domains are education, nutrition, safety, and conservation. The study of persuasive technology and computing is referred to as *captology*. Under the research area captology, Fogg (1998) presents three areas of technology intent: autogenous, exogenous,

and endogenous. Autogenous is when the intent originates from the user itself, and exogenous is when the intent originates from someone who makes the technology available for the user. Endogenous is when the intent of the persuasion originates from producers or creators of the interactive technology, often designers. Persuasive design with endogenous intent has possible additional effects, as it can also provide voluntary reinforcement (Oinas-Kukkonen & Harjumaa 2009). When utilizing persuasive design to facilitate voluntary reinforcement or other behavioral changes with an endogenous intent, one can use digital nudging.

2.2.2 Personalized and Universal Nudging

One can differ between digital nudging targeted for a specific user and digital nudging that is universal. In this research, the two will be referred to as personalized and universal nudging, respectively. Personalized nudging could be used to avoid heterogeneous effects, and this might be favorable as nudging has been criticized for lacking precision (Mills 2020). Personalized nudging is often easier and more sustainable to implement digitally. Mills (2020) proposes that one could make a nudge personalized by choice personalization, that is, to personalize the direction of the nudge or to personalize the delivery method of the nudge. Personal data is a prerequisite, but it is not clear how much data is required to make effective personalized nudges (Mills 2020). If data about the user is not available through other sources, the system performing the personalized nudging needs to collect this data itself. Examples of user data collected that can be used to personalize the nudge to specific user characteristics are the user's location, gender, or past decisions (Weinmann et al. 2016b, Mirsch et al. 2017). In addition, personality traits can affect the effectiveness of nudging (Briggs et al. 2014). On the other hand, we have universal nudging, which is defined as a nudge not tailored to an individual user, created with no specific user data as foundation. Universal nudges can have heterogeneous effects, which in practice means that all users exposed to the nudge will be nudged in the same direction. In many situations, it might be favorable to have personalized nudges instead of universal nudges (Damgaard & Nielsen 2018).

Personalized nudges require personal data. To obtain this data, one can use dark patterns. Dark patterns are when designers use their knowledge about human behavior and psychology to implement deceptive functionality that is not in the user's best interest but in favor of the shareholder value (Gray et al. 2018). Private companies sometimes use dark patterns to push the user in a direction to share more data as this can be essential in order to receive higher profits (Özdemir 2019). The data could also help improve the personalized digital nudges to make them even more efficient. Thereby, the intention of using dark patterns is often to make it difficult for the user to make choices that protect its privacy. Dark patterns can be used to *"hide, deceive, and goad users into disclosure. [...] they obfuscate by hiding interface elements that could help users protect their privacy."* (Waldman 2020). Often this includes requiring registration and sharing data across several platforms in order to access functionality.

Several digital platforms, both public and private, are exploring the "once-only" principle. The "once-only" principle is that users should not have to provide information multiple times but instead provide it once and grant several systems both private and governmental-owned services access to it. This cooperation and sharing of data could lead to more efficient and better systems. It also implies that a more significant amount of personal data will be available for the organizations participating. Further, this will save money and resources for the government (Ministry of Local Government and Modernisation 2019). This could impact the potential for implementing personalized nudges in the public sector.

Several issues need to be addressed when creating nudges and digital nudges, such as personalization, data collection, and practical implementation. From this follows that it is important to have an understanding of ethical concerns and aspects related to practical implementation and hence nudging techniques. Several guidelines and techniques are created for nudging, which can also be applicable for digital nudging. This is because both nudging and digital nudging are based on the same theories but differ in implementation. Hence, the next section will introduce relevant guidelines and techniques for both nudging and digital nudging.

2.3 Implementation Guidelines and Techniques

Renaud & Zimmermann (2018) present a set of characteristics, based on theory from Thaler & Sunstein (2009), that should be applicable for all nudges. These need to be considered to implement a nudge that is beneficial and in compliance with libertarian paternalism. The set of characteristics are repeated here:

- **Retention of all pre-nudge options:** the original set of choices should still be available.
- **Economic incentives should be untouched:** which means that simply rewarding one choice, or punishing another does not constitute a nudge.
- **It is possible to predict the option nudges will choose:** the choice architecture is designed to make it more likely that the nudgee will choose the better option. Hence the intervention is specifically tailored to lead to that outcome.
- **Beneficial:** nudges should be designed to maximize the good of the nudgee, as judged by the nudgee him or herself.

Furthermore, as the ethical aspect of nudging is central, ethical guidelines concerning the creation of nudges have been formed. Renaud & Zimmermann (2018) informs that there are multiple ethical concerns connected to digital nudging in relation to the discipline of information security - for example, the justification for applying the nudge and respecting the person receiving the nudge. The ethical guidelines include the following:

- **Respect for the nudgee:** retention, transparency.
- **Beneficence:** the benefit should be clear and justified.
- **Justice:** as many people as possible should have access to the results from the nudging. This means to take for example language and disabilities into consideration.
- **Scientific integrity:** the researcher that constructs the choice architecture should be accurate and honest about the reasoning behind the nudge.
- **Social responsibility:** the choice architect should consider both expected and unexpected consequences from the nudging.

Clavien (2018) states that there are differences between pro-self, pro-social and selfish goals in terms of ethical justification. Selfish goals are somewhat irrelevant for moral justification, as they are self-directed, and the reason behind the nudge might be personal or subjective. Pro-social and pro-self nudges can be justified with four different (possibly overlapping) arguments: (1) the nudge can have a desirable consequence for the nudgee, (2) the nudge contributes to fulfill important values or principles, (3) the goal comes from a good intention, (4) there exist evidence that the nudgees share the same goals as the choice architects (preferably empirical evidence). Lembcke et al. (2019) state that the fourth argument is the most ethically sound.

By following the characteristics of nudging presented by Sunstein (2014), the nudge should be beneficial to the nudgee, as judged by the nudgee him or herself. In this matter, one could have either a selfish goal or a pro-self perspective. This means that there might be contradictions depending on the point of view if a person has selfish goals that contradict with pro-self goals. This could be, for example, to be as little active as possible. Does this mean that it is unethical to nudge this person to be more active? Also, it is challenging to decide if a nudge is clear, justified, and beneficial for the nudgee. As an example, it is a general perception that education is beneficial and that one should pursue one. This general perception does not consider that people are different. Some people want to do things that do not require education - they might also face considerable difficulties if attempting to acquire it.

Lembcke et al. (2019) further state that it should be easy to avoid the nudge to preserve the freedom of choice. This is a somewhat subjective issue, meaning that it is subjective whether it is

easy to avoid a nudge or not. Further, as pointed out by Lembcke et al. (2019), *“the required effort to recognize a nudge may vary”*. Therefore transparency is also mentioned; it should be relatively easy for individuals to identify when and where they are being nudged.

It is also relevant that not everyone can use all digital platforms due to cognitive skills or disabilities, despite the focus and importance of universal design. Public institutions in Norway are required to develop universally designed services adapted to as many people as possible (Digitaliseringsdirektoratet 2021). If users cannot use a platform because of, for example, sight impairment, it is described as discrimination by Norwegian law (Equality and Anti-Discrimination Act, § 17). From this follows that to achieve justice with the nudging, one needs to have universal design in the digital solutions and design digital nudges for all users.

2.3.1 Nudging Techniques

When viewing nudging from a more practical perspective, one can use different techniques to nudge, which can also work as categorization. In Table 2 is an overview of techniques presented by Esmark (2019). He primarily defines the techniques for non-digital nudges, but they are also applicable for digital nudging. This will be further elaborated in section 2.5.

Table 2: Esmark’s nudging techniques

Technique	Description
Mapping	<i>“works by plodding an informational path of least resistance towards particular welfare choices.”</i>
Feedback	<i>“is closely aligned with mapping, but uses information more systematically and directly to illustrate effects of right and wrong choices, thus adding a stronger push in the direction of what the choice architects aim for.”</i>
Social influence	<i>“utilizes a tendency to align behavior with perceived norms of the social community and peer groups.”</i>
Gaming	<i>“is a favored, if largely implicit, technique amongst public choice architects. Gaming targets the intuitive, associative, skilled and flow-like nature of the automated system through an invitation to active participation.”</i>
Priming	<i>“can be defined as a strategic attempt to introduce an issue in the associative network of individual cognition through the repetition and/or strategic design of a particular piece of information.”</i>
Framing	<i>“usually portrayed as a complement to priming. Whereas priming influences whether audiences think about particular issues, framing suggests how audiences should think about particular issues.”</i>

Norms present in the community and groups are important factors for the technique social influence. Further, several other aspects could be included and considered when developing a nudge in this category. Fogg (2002) presents a study where social influencing is used in a digital context. The study demonstrates that people often respond to computers as they are living things, which means that the computer can trigger social responses from the user and create a social relationship. As the system can take on the role of a social actor, a new world of persuasion methods opens up - a persuasive actor can be persuasive by additional means like rewarding people with positive feedback, modeling a target attitude or behavior, or providing social support (Fogg 2002). Different cues can affect the system’s role as a social actor, and these are presented in Table 3.

Table 3: Social queues affecting the role of a social actor

Cue	Description
Physical cues	Physical characteristics, for example attractiveness.
Psychological cues	Conveying empathy, convey personality - people tend to favor computers with "personalities" that matches their own.
Language	Using dialogue boxes, welcoming users by their name, use praise. By receiving praise from the system, users found that they were more willing to work with the computer again.
Social dynamics	Unwritten rules for interacting with people.
Social roles	Making a system adapt a certain role, depending on your target group, for example, therapist or teacher.

As further suggested by Fogg (2002), one should be careful with using these types of social queues to persuade the user if the sole role of the system is to improve efficiency, as the social aspect can make the interaction more time-consuming. As digitalization in the public sector usually lead to higher efficiency (Kotarba 2017), it can seem like in these cases, social queues are not or only carefully used.

The mentioned frameworks, guidelines, and techniques are meant for nudging but can also be applicable for digital nudging. Additionally, there exist other frameworks adapted for the digital context which focus on technical implementation. In the following subsection, one of the most relevant ones will be elaborated, i.e. the framework defined by Gregor & Lee-Archer (2016).

2.3.2 Framework for Digital Nudging

The proposed framework of Gregor & Lee-Archer (2016) defines digital nudging based on three components. First, policy; social investment, which focuses on a positive social outcome. Second, technology; predictive analysis and real-time application, where they point out that new technologies can improve and predict outcomes based on data collection. Third, process; the nudge, as defined by Sunstein (2014) in section 2.1.

The framework can be summarized as follows:

- Map the context - What is the problem at hand?
- Design the nudge - Design different nudge techniques based on the problem.
- Experiment and evaluate - Randomized trials to see what has the best effect on the problem at hand.
- Digital technologies - Use information technology and data to improve all the steps above.

As implied, an essential part of the Gregor & Lee-Archer (2016) framework is iteratively experimenting with focus on the effect of the digital nudges. To optimize the outcome, several randomized, rapid trials are conducted. The technological component is included in the entire process by gathering and using large amounts of data and techniques like data mining and predictive analytics, making it easier to observe the effects of the nudges. Digital nudging based on data and information technology has great potential within improving social outcomes (Gregor & Lee-Archer 2016). However, this approach would be challenging for the public sector to implement without further established guidelines.

2.4 Nudging and Digital Nudging in the Public Sector

One of the motivations and potential advantages of using nudging in the public sector, more specifically within political policy-making, is that it is a cheap and effective way to influence citizens' choices without implementing injunctions or incentives. Hence, it might be a cheap and effective way to promote behavior in the citizens' and the policy-makers best interests without interfering with freedom of choice (Hansen & Jespersen 2013). For example, several persuasive features or nudges can be embedded in a system to increase citizens' participation in public participation processes. Providing information based on the users' location and using social influence - informing the users about what participation processes other users are engaged in - are effective persuasive features (Lee et al. 2017). There have been several discussions about whether nudging by governments should be implemented or not. As previously described, some argue that nudging is a manipulation of choice that opposes freedom of choice. One difference concerning nudging for private companies and the government is that it might be expected that private companies do things in their best interest, whereas people expect a lot more from the government - they expect the government to consider what is best for the government, society, and the citizens (White 2013).

Nudging has become somewhat widespread in several countries, and the use shows promising results within several areas such as health and economy. Some countries have already implemented nudging in different areas of the public sector. An overview of all governmental nudge units as presented by Deloitte Center for Government Insights (2020) is presented in Table 4.

Table 4: Governmental nudge units

Country	Description
Canada	Canada's Ontario Behavioral Insights Unit, launched in 2013, has worked on numerous nudge projects.
Ireland	Ireland's Sustainable Energy Authority has created a Behavioral Economics unit to encourage changes in homeowners' and businesses' energy behavior.
Denmark	Denmark's INudgeyou works closely with the government to enact evidence-based policies.
Netherlands	The Netherlands' Behavioral Insights Group, launched in 2014, is a central unit that coordinates behavioral insights work in each department.
United Kingdom	The United Kingdom's Behavioral Insights Team, the worlds first government nudge unit, was founded in 2010.
Japan	Japan's Behavioral Science Team, founded in 2017, is a collaboration between academia and the public sector.
USA	The United States' International Revenue Science (IRS) has a dedicated Behavioral Insights Team and introduced a behavioral Insights Toolkit in 2017.
Germany	Germany's Wirksam Regieren established in 2015, works with federal agencies to drive effectiveness in health care, finance and public service.
Greece	Greece's Nudge Unit founded in 2016, focuses on helping individuals, organizations, and businesses improve decision-making using behavioral insights.
Australia	The Australian government's Behavioral Economics team was launched in 2015.
Peru	Perus Ministry of Education has launched the MineduLAB to use behavioral science to address issues such as teacher absenteeism and student performance.
Singapore	Singapore's Behavioral Sciences Institute works in areas such as health care, nation building and well-being to drive better policies.

The former prime minister of the UK, David Cameron, was the first to establish a governmental Behavioral Insights Team (BIT), often referred to as the "Nudge Unit," in 2010. The Nudge Unit has, amongst other things, attempted to lower alcohol consumption amongst the youth (Hansen & Jespersen 2013). The use of nudging can produce several positive outcomes, but the balance between policy-making, nudging, and how liberal this is have been discussed in several cases (Quigley 2013). As is stated, nudging as libertarian paternalism does not take away options from the user but instead directs them. However, even if one has this perspective as a starting point, it still invites the discussion regarding what one can nudge people to do and what would be immoral.

In Denmark, the government has close cooperation with several research companies, primarily INudgeYou, that focus on how one can use nudging in public policies and companies in general. INudgeyou specializes in applied behavioral research. For example, they have researched how small nudges can make the job better and reduce occupational injuries within postal services. Further, INudgeyou is connected to the Danish Nudging Network (DNN), which was established in 2010 by a behavioral scientist at the University of Roskilde (DNN 2021). Additionally, The European Nudging Network (TEN) is also actively researching nudging. All these companies focus on encouraging research on behavioral science like nudging and share how this can be utilized better within both politics and private companies (TEN 2021). All these companies have done several studies on how nudging can be used in the public sector. They have looked into everything from carriers to canteens and grocery stores.

The nudge unit in Germany has a wide range of focus. They have world-class behavioral research and have implemented the research in both private and public sectors. Amongst other things, they thrive to promote nudging and behavioral science to innovation and in relation to human-centered public policies (Bahavia 2021).

To get a clearer picture of the use of nudging and digital nudging in other countries, it is deemed relevant to explore the potential, actual use and implementation. Hence, concrete examples of this will be presented in the upcoming sections.

2.4.1 Nudging in the Health Sector

Obesity is becoming a bigger problem and has been described as the new pandemic. If the obesity levels would have remained at the levels they were in 2010, the two decades following this year would give medical expenses of 549.5 billion US dollars (Finkelstein et al. 2012). As obesity can affect work opportunities, one could expect to have more earnings in the form of more tax dollars by fighting obesity (Schulte et al. 2007). There are also great saving potentials in medical expenses. Taking a US company as a starting point, using the same parameters to make a similar estimation to a European population, shows that investing 292 euros per citizen in a wellness program could reduce the medical bills by 25 percent. The proposed wellness program consists of tracking devices and a user interface to visualize all the trends for the user and similar citizens by adding serious gaming and competition. This means that Europe could save almost 60 billion euros yearly by doing this investment (Piniewski et al. 2011).

In 2019, 85,4 percent of the medical expenses for the population in Norway were covered by the public sector (Statistics Norway 2020). In addition, the amount spent on medical expenses has increased between 0.9-3.4 percent every year from 2013 to 2019. Considerable savings can be made by nudging towards a healthier lifestyle.

Non-communicable diseases, such as, cancer, cardiovascular diseases, diabetes, and chronic obstructive pulmonary disease can lead to premature death. As a member of the World Health Organisation (WHO), Norway has committed to reduce the number of deaths originating from these diseases by 25% within 2025. In 2018, The Norwegian Directorate of Health defined ten measures in pursuit of this goal. For all these diseases, tobacco, alcohol, physical activity, and diet are risk factors. One of the suggested measures is centered around personalized prevention with digital tools, where one could use digital nudging (Helsedirektoratet 2018). These digital tools can be more cost-efficient, and digital tools are shown to make it more likely that the user to succeed with a lifestyle change (Helsedirektoratet 2018). With the increased digitalization, increased

amount of older people, and more occurrences of chronic diseases, the use of digital services could give a better experience for the patient and help relieve the physical health services.

Nudging and Organ Donation

An example often referred to concerning nudging and its possible significant impact is organ donation. In most countries, one has to opt-in to be an organ donor - you have to actively state or inform that you are; if you do not, you are not. In The United Kingdom, you are, in contrast, considered to be an organ donor if you have not expressed otherwise or if you are in one of the excluded groups. This is an example of an opt-out system: you have to actively choose to *not* be a donor. Other countries that operate with opt-out are Spain, Argentina, and Chile. This case of nudging has saved lives: studies show that deceased donor rates were higher in opt-out countries and that making organ donation an opt-out instead of opt-in has nearly doubled the number of people who consent to be organ donors (Weinmann et al. 2016a). There are also more liver and kidney transplants with opt-out (Shepherd et al. 2014).

2.4.2 Nudging in the Educational System

Education has positive effects on society in areas such as crime, health, and good citizenship. It also gives significant return rates - in Norway, the internal rate of additional schooling is around 11% (Bhuller et al. 2017). People one could nudge in this context are students, parents, and teachers. Decisions concerning education will often primarily affect young people, which do not necessarily have a fully developed brain because of young age. Despite this, they are expected to make crucial decisions that affect the rest of their lives and society. This means that by utilizing nudging, one could help many make seemingly better decisions. When making such decisions, one crucial aspect is information and specifically salient information. This indicates that these decisions are sensitive to framing and informational nudges (Damgaard & Nielsen 2018).

Many applicants for teacher's education in Norway ends up not accepting after receiving an offer. An experiment was conducted to explore if nudging could improve these numbers. Several nudging techniques were implemented. One of them was informing the students that one could win books related to the syllabus if they accepted the offer (it was in this experiment qualified as a nudging technique despite having financial value). Another nudge included information about the teaching career and possibilities. The final nudge included asking the students if they were planning to accept the offer or not. The experiment showed no difference in the number of people accepting. This was by the researcher reasoned with the fact that nudging works best on decisions that are often made on impulse, but in settings where important decisions are to be made, the potential for nudging is not that big (Folkestad 2017).

Several effects were shown by reframing (i.e., using framing) financial information on education choices. One study performed by Field (2009) gave two different options with the same financial, monetary value to a group of university students in the USA. One package involved tuition loans which the university would repay if the student chose a low-paying public interest job after graduation. The other package consisted of tuition waivers issued by the university that had to be repaid after graduation if the student chose a high-paying job not in public interest. Students were 36-45% more likely to choose a public interest and low-paying job if they received tuition waivers. Also, if this information was presented before enrollment, the students receiving tuition waivers were twice as likely to enroll. As shown in the study performed by Field (2009), the nudges affected the income of several students, and it could therefore also possibly affect their wage increase for the rest of their lives. This could then affect, for example, what mortgage they can apply for and receive and hence the areas they could live in - which again could affect what schools their children go to and so on. The study showed positive effects for the public sector, but it can certainly be discussed if nudges that affects these crucial decisions are ethical. It is one thing to nudge people to get an education, which will for many give more options in the job market and a safer future. However, it is something else to use student loans to nudge what type of jobs the students will pursue and accept after graduation.

In addition, social belonging, identity activation, and mindset nudges have proved to be effective. Studies show that information about older students' struggles has positive effects on grades (Wilson & Linville 1982, Walton & Cohen 2011). It is essential to underline that these types of nudges in several cases only give positive results for disadvantaged or minority students (Damgaard & Nielsen 2018). The positive effects of some types of nudging can, in general, give heterogeneous results. In practice, this can mean that positive behavioral changes are more likely to be obtained for people lacking the elements used to nudge. For example, providing more information is most likely to affect those lacking information (Damgaard & Nielsen 2018).

2.4.3 Other Areas

Priming is one of the main goals in at-large campaigning in politics. The priming is often centered around different policies, such as health policy. When constructing nudges that can help the user with health-related issues such as eating habits and lifestyle choices, it is crucial to utilize priming to make the user aware of the issues that can come from bad lifestyle choices and eating habits (Esmark 2019). In policy-making, paying attention to the insights provided by behavioral insights and nudging means that one can be one step closer to solving significant societal problems, such as global warming and obesity (Hansen & Jespersen 2013).

2.4.4 The Public's Opinion of Nudging in the Public Sector

The public's attitude towards nudging is likely an essential factor to how successfully implemented the nudging can be within the policy area (Hagman et al. 2015). Despite this, the debate concerning the use of nudging in the public sector has not been significantly affected by the general public. As the focus on nudging in the public sector has increased, the types of nudges have somewhat shifted to focus on pro-social nudges instead of pro-self nudges (Hagman et al. 2015).

The study conducted by Hagman et al. (2015) presents different types of nudges categorized as pro-self or pro-social for participants from Sweden and the USA. The results showed that the acceptance of the different nudges was high. The acceptance for the nudges used in the study was typically higher in Sweden compared to the USA. This was reasoned by the fact that Sweden is a welfare state. The study further shows that there were lower acceptance levels for pro-social nudges compared to pro-self. Further, other systematic differences between the results from Sweden and the US suggests that cultural differences also have to be considered when developing nudges. It was also more likely that the participant saw the nudge as being intrusive if perceived as pro-social by the participant. Differences concerning how participants perceived the nudges were also found - participants that showed to prefer analytical thinking were less likely to think of the nudges as intrusive. One paradox identified in the study was that *"there was a majority support for all presented nudge-policies included in the survey,"* and *"a majority of the respondents also judged the same policies as intrusive to freedom of choice in six out of eight scenarios."*

There have also been conducted studies exploring behavioral change policy more generally where the use of other stronger policies (i.e., bannings and economic intensives) were also included. Branson et al. (2012)'s study with 24 participating countries found that the public was more positive towards behavioral change policies directed at businesses instead of individuals. This might indicate that people want the companies to take part of the responsibility towards, for example, a greener planet and healthier population. As argued in the study, it might also be because these types of incentives for behavioral change might have the lowest cost for the user. It was further found that *"the more prosperous a country is (as measured by GDP per capita adjusted for purchasing power), the less likely its public are to support behavior change interventions"*. Another interesting finding was that in countries with more authoritarian cultures with centralized, top-down governments, the people have higher support for outright bans for different behaviors (in this study, behavior concerning eating habits and smoking). Nevertheless, it is hard to pinpoint the reason - it could possibly be cultural differences. However, even though the tendency is that there are differences between those having and not having a more authoritative culture, we do not know if this is the reason for the differences. Paradoxes arose in this study as well: even though

people are in general skeptical towards a state that interferes with the population's decisions, they are also positive to several of the techniques presented to them that could be used to interfere with the population's decisions. For example, "53% agreed that the 'government should not get involved in what people choose to save for retirement', while at the same time 69% agreed that the 'government should change the law so that everyone has to enroll in a pension scheme'." There were 36% of the participants that agreed with both statements.

One of the less intrusive nudging techniques described in the study was the provision of information. This was also the most supported nudging technique. In addition, it was shown that there was a correlation between the acceptance of government action, education levels, and knowledge of the issues where nudging was suggested implemented. Another finding was that people found in the top income brackets were typically a bit more supportive of the interventions than the people found in the low-income brackets within a country. Other factors that affected the attitudes towards interventions other than income were employment status, gender, and age. These differences were often consistent across countries. This data should give reason to discuss whether it is ethical to implement something that not the entire population wants.

2.4.5 Relevant Regulations and Laws

There exist many laws and regulations that affect digital nudging. As mentioned, it might be favorable to have personalized nudges, which require collecting user data if this is not available. Because of this, data-collecting regulations and laws can affect the possibilities to implement personalized nudges. Following are descriptions and explanations of the relevant laws and regulations for the public sector in Norway.

GDPR

The General Data Protection Regulation (GDPR) was defined by the EU and incorporated in Norway in July 2018. The GDPR concerns the "[...] protection of natural persons with regard to the processing of personal data and on the free movement of such data" (Council of European Union 2016). Data related to people in the EU, or personal data, is by the GDPR defined as all data that relates to an identifiable person. This means that the GDPR sets requirements for data collection and handling for companies providing systems or services for people within the European Economic Area (EEA).

As many systems demand a high-scale collection of personal data (to provide, for example, personalized content), both data protection by design and data protection by default are essential concepts in the GDPR. Hence, several strategies are suggested by the European Union Agency for Network and Information Security (ENISA) as a supplement to GDPR (Danezis et al. 2015). The strategies are not requirements, but they can help companies to comply with the requirements. The strategies can be found in appendix B.

Regulations and Laws Concerning Data Collection in Norway

In addition to GDPR, Norway has additional laws concerning data collection referred to as The Personal Data Act. The Personal Data Act incorporates GDPR and specific rules for Norway that are stricter than those defined in the GDPR. This means that if one processes any personal data in Norway, one has to take both GDPR and The Personal Data Act into consideration (Birkeland 2020). The Norwegian Data Protection Authority (DPA) supervises authorities, companies, organizations, and individuals to ensure they follow the data protection legislation. The Personal Data Act and the GDPR are the primary legislation that directs the work of the DPA.

Other Relevant Regulations and Laws

As explained in section 1.1, combining digital nudging and Big Data could have great potential. The same can be said for digital nudging and Artificial Intelligence (AI). The The European

Comission (2021) in April 2021 proposed new rules for AI to ensure that the technology will be in line with the values of the EU. This was to prepare for the future evolvment of technology. The EU further defined what approaches are deemed trustworthy in the context. One unacceptable approach was AI *"that manipulate human behavior to circumvent users' free will."* Furthermore, AI systems that were classified as high-risk included essential private and public services. High-risk AI systems will have to follow strict obligations before they reach the market. These are shown in Appendix C.

2.5 Summary of Findings and Key Concepts from the Literature Study

The literature study presented relevant research concerning nudging and digital nudging in various contexts. Several discussions and examples regarding concerns related to nudging gave solid grounds for objective 2, the development of guidelines. However, it also revealed that there is little research concerning digital nudging in the public sector. There are also no identified guidelines that consider the needs of the public sector, neither in general nor specifically in Norway. However, several generic guidelines can serve as a starting point for specific guidelines. This shows that expanding the knowledge base for digital nudging in the public sector is a relevant focus area. Overall, the literature shows that both objectives of this thesis are relevant and might also be essential.

Through the literature study, two frameworks were defined: a design framework and a conceptual framework. The purpose of these frameworks was to sum up the essential definitions and relevant key concepts for the thesis.

The conceptual framework, as shown in Table 5, illustrates the key concepts expected to be relevant in the data and analyses and was hence important for answering both RQ1 and RQ2.

Table 5: Conceptual framework containing key concepts

Concept	Description
Digital Nudging	<i>"the use of user-interface design elements to guide people's behavior in digital choice environments. Digital choice environments are user interfaces [...], that require people to make judgments or decisions"</i> (Weinmann et al. 2016a).
Libertarian Paternalism	<i>"an approach that reserves freedom of choice but authorizes both private and public institutions to steer people in directions that will promote their welfare"</i> (Thaler & Sunstein 2003).
Pro-self nudging	Focuses on the welfare of the individual, is in compliance with libertarian paternalism (Hagman et al. 2015).
Pro-social nudging	Focuses on social welfare (Hagman et al. 2015).
Choice architecture/ Choice environment	<i>"the use of user-interface design elements to guide people's behavior in digital choice environments. Digital choice environments are user interfaces [...], that require people to make judgments or decisions"</i> (Weinmann et al. 2016a).
Choice architect	The creator of the choice architecture.
Cognitive Biases	<i>"cases in which human cognition reliably produces representations that are systematically distorted compared to some aspect of objective reality"</i> (Haselton et al. 2015).
Personalized Nudging	Nudging that is targeted for a specific user.
Universal Nudging	Nudging not targeted for a specific user.

The design framework as presented in Table 6 took inspiration from the list of nudging techniques defined by Esmark (2019) presented in section 2.3. As these techniques focus on nudging and not digital nudging, an additional technique has been added, and several techniques have been expanded or updated to fit a digital context. The design framework was of most relevance for RQ2, where the central part concerns types of digital nudging.

Table 6: Design framework

Technique	Description	Example
Mapping	Through the presentation of information and choice architecture, the user is drawn to make a particular choice by creating a path of least resistance.	The path of least resistance could be emphasized by using different presentation options, and can be done by placing the important information in a highlighted position or emphasizing some actions over others through design.
Feedback	Is aligned with mapping, but gives a much stronger push towards the "right choice". Information or design is used in a more directly to illustrate the right and wrong choices compared to mapping.	Using the colors green or red indicates for many users very strongly that an action is "correct" or "wrong". This can be done by for example making a button green.
Social Influence	A persons behavior is often aligned with the social community, peer group and the norms that come with this. This tendency is utilized to push people in the direction of the majority.	An online store can categorize a product as "other customers' favorite" or "most popular product" to boost interest. Creating a more social/personal relation with the user through different queues and using a human or personal touch when nudging is also included.
Gaming	Uses aspects found in gaming to nudge the user in specific directions. This can be rewards, active participation and a flow similar to games.	To promote good health, games or apps with rewards or other elements can motivate people. For example training apps give you challenges with rewards upon completion.
Priming	Is used to make users aware and think about specific matters, i.e., introducing this matter to the user by strategically design and/or repeat specific information. It often creates a reference point for the user.	Give specific information to a user that informs about differences in clothing production in different companies.
Framing	Is often a complement to priming. Framing is concerned with what the user thinks about a specific matter, and suggests how they should think about it. In other words, what the user should think about the reference point that was established with using priming.	Using the same clothing example as in priming, framing would through information try to affect the users opinions about clothing production, and hence also maybe affect by which companies the user buys clothes from later.
Defaults	When the user is presented with a choice, one option to the choice is already selected and will be selected unless the user actively changes it.	When selecting a plan for retirement savings, the default choice could be to save a reasonable amount instead of 0.

3 Research Method

The scope of this work has been to evaluate the utilization and level of awareness of digital nudging in the public sector in Norway. This chapter describes the procedures of data generation and the methods used to analyze the obtained data.

3.1 Research process

The research process for this project was based on the model of research processes defined by Oates (2006) in "Researching Information Systems and Computing." Various approaches, strategies, data generation methods, and data analysis methods are presented in the book. An overview of all components chosen for this specific project is presented in Figure 1 and further explained below.

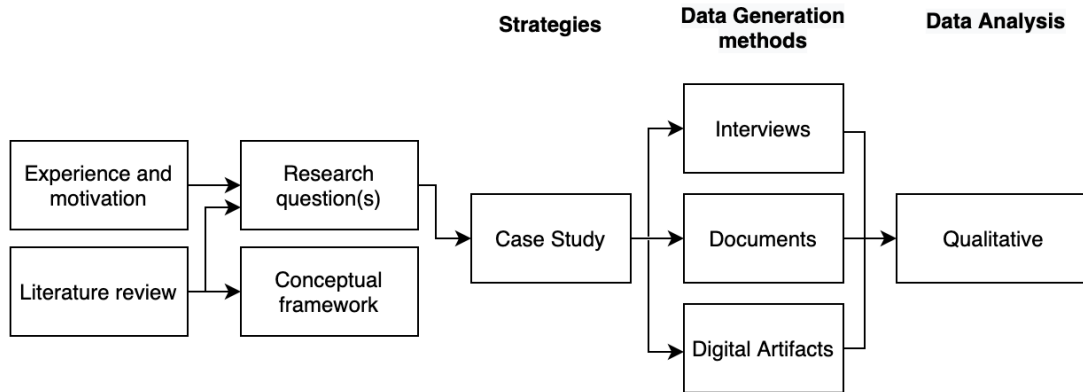


Figure 1: Model of research process

The literature study was performed to establish a knowledge base and become familiar with existing research relevant and connected to the scope and motivation of the thesis. The research questions and the conceptual framework were redefined several times during the literature study due to an increased understanding of the problem.

The process continued by defining the case. The strategy was to conduct a qualitative case study focusing on digital nudging in a public organization in Norway. It was desired to look into an organization that focuses on digitalization and is eager to develop and implement new technological features. Therefore, NAV was chosen to act as a representative of the public sector in Norway. This was because it is one of the largest public organizations in Norway and amid an extensive modernization and digitalization process (NAV 2020b). However, the magnitude of analyzing NAV in its entirety was too extensive. Therefore, one product area within NAV, *Illness in the Family*, which is significantly involved in the ongoing digitalization processes, was chosen as the case for the case study. It was assumed that *Illness in the Family* would be an adequate representation of the overall level of awareness and (possible) utilization in the public sector, as is the essence of the research questions. Performing a case study was considered the best approach to gain relevant and in-depth knowledge related to the research questions while still maintaining a suitable scope. The case study was based on data from interviews, digital artifacts, and documents. Further details regarding the case are described in chapter 4.

As all analyses are subject to bias and subjectiveness, collecting data from different sources and triangulating it was considered useful. In practice, this means cross-referencing the findings from the different data sources with each other during the analysis. The purpose of this was to increase the reliability and validity of the findings.

The following sections will explain the research process in further detail, starting with the data generation methods. As the data generation methods will be discussed in relation to the research

questions, a repetition of the research questions defined in section 1.2 follows below:

- **RQ1:** What is the level of awareness and utilization of digital nudging in the public sector in Norway?
- **RQ2:** What types of digital nudging are most in line with the values of the public sector in Norway?

3.2 Data Generation Methods

Explanations and justification of data generated by interviews, digital artifacts, and documents will be elaborated in this section. Further, the section includes overviews of interviewees and their relevance, digital artifacts, and collected documents.

3.2.1 Ethical Framework

Before the interviews, the Norwegian Center of Research Data (NSD) approved the research and data collection method for the interviews. The application included an interview guide (appendix D) and a participation form (appendix E). The participation form, which had to be read and approved by each interviewee before the interview, included an overview of how, where, and how long the data would be stored, in addition to a summation of the topics that would be discussed in the interview.

The digital artifacts and documents contained no personal data and were publicly published and available online.

3.2.2 Interviews

The interviews were semi-structured with predefined topics and open questions derived from the interview guide, with the opportunity to supplement with additional questions if needed. The interview guide contained topics that were deemed relevant based on the research questions and scope. The specific questions varied based on the interviewee's knowledge, experience, and area of work. This approach was chosen to promote a dynamic conversation and not to place restrictions. Further, this method opened up for the interviewees to bring up issues they felt were of importance for the research based on their knowledge of the subject (Oates 2006). The interviews lasted about one hour and were conducted digitally using Microsoft Teams. All interviews were recorded by using the recording functionality offered by Microsoft Teams, where both audio and video were recorded. The interviews were later transcribed by using these recordings.

It was expected that data collected from interviews would be of great importance for both RQ1 and RQ2. In relation to RQ1, the utilization of digital nudging could be explored through only using a digital artifact analysis, but it was also considered beneficial to have additional data gathering methods. As the goal was to find personal and professional opinions on the matter, it was deemed very difficult to find any conclusive data related to the level of awareness without conducting interviews. This is often best achieved with an open conversation, as opposed to strictly structured interviews or questionnaires (Oates 2006). It was also considered difficult to answer RQ2 without interviews, as the data obtained for this RQ could if so be deemed speculative.

Interview Participants

Seven interviews were conducted in total. The main focus was to recruit candidates that had relevant knowledge or experience about the topics of interest. The table below shows an overview of interviewees and their field of work.

Table 7: Interview participants

Interviewee	Organization, Department	Position	Relevance
Person A	NAV, <i>Illness in the Family</i>	Team worker	Had insight related to how digital solutions are developed in <i>Illness in the Family</i> .
Person B	NAV, <i>Illness in the Family</i>	Team leader	Had insight related to how digital solutions are developed in <i>Illness in the Family</i> .
Person C	NHH, Economics	Professor	Is an expert on behavioral economics, obtains experience with research concerning nudging in public organizations.
Person D	NAV, Formerly with <i>Illness in the Family</i>	Designer	Had insight concerning the process of designing digital solutions for <i>Illness in the Family</i> and other product areas in NAV.
Person E	NAV, other department	Behavioral psychologist	Had experience with HCI and the psychological perspective of behavioral influence through nudging.
Person F	NAV, <i>Illness in the Family</i>	Designer	Had insight concerning the process of designing digital solutions for <i>Illness in the Family</i> .
Person G	NAV, other department	Service designer	Had insight concerning universal design and the design process related to different product areas or departments in NAV.

The recruitment of interview candidates was initiated with person A and person B, who held positions of team worker and team leader in the product area *Illness in the Family* at NAV. The mentioned candidates and the thesis’ supervisor provided recommendations to additional interview candidates. As these recommended candidates all appeared to hold experience and knowledge on the topics of interest, they were all contacted. A short description of the project (presented in appendix F) was sent to potential interview candidates with an invitation to participate in the study.

3.2.3 Digital Artifacts

Online application forms and related web pages containing information covered by *Illness in the Family* intended for private users were defined as digital artifacts. The digital artifacts map to the benefits provided by *Illness in the Family* (described in section 4.2.1). The data was collected by navigating and testing the pages and application forms online. Data collection was restricted to the application forms as perceived by citizens and not to the process following submission. This means that no applications were submitted. An overview of the digital artifacts is presented in Table 8.

These specific digital artifacts were chosen as it would be useful to investigate what digital nudging is present on the online solutions for the area of focus. The main goal of examining the digital artifacts was to gather additional perspectives and data related to the awareness and utilization of digital nudging. This implies that the digital artifacts were of most relevance for RQ1. In addition, it could indirectly help identify what types of nudging could have the highest potential and hence relevance, i.e., RQ2. Also, as the interviews would result in subjective data, the analysis of digital

artifacts offered more objective results, which could be used for comparison and cross-checking.

Table 8: Digital artifacts

Benefit	Type	Description
Attendance allowance in connection with a child’s illness	Web page	Includes the application form and information pages related to the benefit
Care benefit	Web page	Includes the application form and information pages related to the benefit
Attendance allowance for people over 18 years old	Web page	Includes the application form and information pages related to the benefit
Basic benefits and assistance benefits	Web page	Includes the application form and information pages related to the benefit

3.2.4 Documents

Several relevant documents were acquired through the interviews. The main objective of analyzing documents was that they could be used as guidance in relation to the development of guidelines and provide data relevant to the research questions. Additionally, documents was considered essential to acquire solid knowledge of the case and thereby sufficiently adapt the guidelines to the public sector.

An overview of the relevant documents is presented in Table 9. Documents were included in the case study based on relevance for the scope (further described in section 3.3.3). All documents were acquired in connection with NAV or produced by NAV and found online.

Table 9: Documents

Title	Relevance	Description	Where
AI Principles in NAV	Objective 2	Internal guidelines	Appendix G
17 pain points for users of <i>Illness in the Family</i>	Objective 1	Document for user insight	Appendix H
Design manual 1	Objective 1	Internal guidelines	section 4.1.2
Design manual 2	Objective 1	Internal guidelines	section 4.1.2
”NAV’s omverdensanalyse 2021”	Objective 1	Development, trends and consequences up until 2035	External source
Annual Report NAV 2020	Objective 1	Document concerning NAV’s annual goals, achievements and projects	External source
Complaints and Conversion in NAV - What can be done better?	Objective 1	Potentials for improvement in relation to the number of received complaints	External source

not considered during the software development. The analysis was conducted without further knowledge regarding what the employees in *Illness in the Family* focused on when developing the platform to obtain as objective results as possible.

3.3.2 Analysis of Interviews

The thematic analysis of the interviews included dividing the text into three parts: irrelevant segments, segments included to describe the context, and segments that were directly relevant to the research. Subsequently, an inductive analysis was conducted. The relevant data were categorized based on the recurring subjects in the interviews, which in turn helped identify key themes. The key themes are shown in the results chapter, section 5, as the results are structured in correlation with these key themes. This made it easier to compare and relate the answers from the different interviews and identify data related to the most relevant areas of the research. Finally, the data was reviewed and filtered by reviewing each key theme and connected results.

3.3.3 Analysis of Documents

Several of the documents obtained were internal guides actively used by NAV. The analysis included determining the purpose of these documents. If the documents were developed for a different domain or with a different motivation compared to what this thesis would use them for, this was taken into consideration. Furthermore, the documents were reviewed and included according to the respective area of relevance. The possible areas of relevance were "objective 1" and "objective 2" (seen in column "Relevance" in Table 9), which correlated with the objectives for the study explained in section 1.2. In cases where relevance would overlap between the two objectives, the seemingly most appropriate was chosen.

3.4 Development of Guidelines

As Figure 2 illustrates that the documents, digital artifact, interviews, and literature were all included in the work of developing guidelines. The document relevant for the guidelines was used mainly to see what format, length, and wording the guidelines should have. It could not be used as direct inspiration as the documents' purpose and domain were not the same as the guidelines developed in this thesis.

Answering the research questions was helpful in the development of guidelines, i.e., reach objective 2. In particular, RQ2 contributed to better understand what types of digital nudging the guidelines should consider to be applicable for the future. The interviews were crucial to get an impression of what areas the guidelines should take into account. The literature study gave a perspective of what ethical aspects are central in relation to the concepts of nudging and digital nudging.

The guidelines consisted of general principles and a checklist to ensure that the principles were followed. The work of developing the main principles did not start until the data were analyzed so that all relevant data would be taken into consideration. After this, an iterative process of defining the main principles started. As the checklist is intended to evaluate if the main principles have been followed (further explained in section 7.2), it was designed after the general principles.

3.5 Treatment of Collected Data

Data from the analysis of the digital platform were saved as screenshots as examples of observations. These were saved locally and added directly to the thesis.

The data collected from the interviews, i.e., recordings and the transcriptions, were saved on NICE, NTNU's storage service for sensitive data. The recordings were not deleted straight after transcription because of possible future work and publication. Since the data included video recordings, it could not be anonymized straight away.

3.6 Evaluation and Limitations

A case study as a research strategy is generally a good way to examine complex situations where uncontrollable external factors exist and where one wants the research to reflect people's experiences as accurately as possible (Oates 2006). Since digital nudging is affected by multiple external factors, a case study was considered the best choice for this research. However, there are disadvantages and limitations to this strategy. It is, for example, time-consuming to obtain documents and to recruit interview candidates.

Further, no data generation methods will be a truly objective picture of reality (Oates 2006). This means that the data collected from the online platforms and interviews will, to some degree, be affected by subjectivity. Interviews are generally, as mentioned, a good method for generating in-depth data. On the other hand, with semi-structured interviews, the interviewee may supply their own opinions on the subject, and this might not always correlate with the facts. The general reliability of semi-structured interviews is challenging to guarantee, as the interviewees' impressions might differ before and after the interview has been conducted. It is also impossible to extract the researcher's prejudices which might affect participants in the study, in this case, the interviewees. In addition, the interpretation of qualitative data will be closely tied with the researchers' background and perspectives (Oates 2006). Moreover, this research could have benefited from including a wider variety of interview candidates, but this proved difficult because of time constraints.

It was assumed that by using a design framework to analyze the digital artifacts, the findings should be possible to recreate if not removed or updated on the digital platform. However, the reliability can be affected by the possibility that some digital nudges were overlooked and not identified. Further, the data gathering and analysis could have been affected by the researcher's subjectiveness.

The documents obtained through the case study were acquired through or created by NAV. These can also be affected by biases and subjectiveness. However, as many of these are published for the public, it is assumed that they reflect facts only and contain restricted subjectivity.

Triangulating, that is, assessing the correlation between multiple items, could have contributed to obtaining internal consistency. This showed positive effects on the reliability of the study.

4 Case Description

The case study was centered around a product area within NAV called "Illness in the Family". This chapter will give a detailed description of NAV and "Illness in the Family" to further define the scope of the case.

4.1 Case Background

Knowledge about NAV and how they work is essential to better understand the case. This section will therefore focus on NAV, their work, and previous work regarding nudging and digital nudging.

4.1.1 NAV

NAV, the Norwegian Labour and Welfare Administration, administers a third of the national budget by distributing welfare benefits, such as unemployment benefit, work assessment allowance, illness benefit, pensions, child benefit, and cash-for-care benefit. It is one of the most known public organizations in Norway. NAV consists of 19 000 employees: around 14 000 on state level and around 5000 on municipality level.

Vision, Values, and Goals

NAV's vision is "we give people opportunities." With this vision, it hopes to create pride and commitment within NAV and let the community, users, and partners know what it wishes to achieve (NAV 2013). Further, NAV has a set of defined values, and these include that they should always be evident, present, and solution-oriented (NAV 2013).

The primary management methodology in Norway's government is management by objectives and results. This methodology is also, to a large extent, applied in NAV. Hence, to direct and assess its work towards goals and desired results, NAV uses *objective and result indicators*. These indicators are different depending on whether the office is on a state, municipality, or county level. NAV has a simple overview of these indicators, and their status is presented on preset scorecards and includes both main goals and sub-goals.

NAV defines approximately four main goals each year according to their previous annual reports. These goals vary in formulation, but they usually cover the same subjects. Based on the latest updates from NAV, the main goal for the organization is to have more people working and less on benefits (Roaldsnes 2018). More specifically, helping people find work and keep their jobs, and give the correct benefits at the right time. Further, NAV wishes to make it easy for people to identify the different benefits they might be qualified for, make sure they find them without trouble, provide good service for the users, and keep the work and welfare management efficient (NAV 2020a). Furthermore, NAV has additional goals that are not directly related to the main goal, but they are still considered essential focus areas (Roaldsnes 2018). Additionally, each product area or department has its own goals specific to its work (see more in section 5.6.1).

According to Roaldsnes (2018), there is little research concerning what activities and routines leads NAV towards reaching its primary goal. The research conducted suggests that nudging could play a potential part in getting more people working. This is elaborated in the next paragraph, "Nudging in NAV." As mentioned, NAV also has several smaller goals within its departments or product areas where the progress could be influenced by nudging.

Digitalization in NAV

The IT department in NAV has been a primary focus area for NAV over the last few years, and this has resulted in several awards related to digitalization. NAV has expanded the IT department enormously and initiated several modernization and digitalization projects, which is now focusing

on making the systems more efficient and flexible. This is in addition to renewing outdated systems (NAV 2020b).

In January 2019, NAV started a new digitalization project for the modernization of information and communication technology (ICT) with a budget frame of 872 million NOK (NAV 2020b). This project concerns several specific areas of benefits in NAV. The modernization primarily focuses on self-service and automation.

Nudging in NAV

Even though NAV does not use nudging very actively, the organization has been open to research projects that focus on nudging. Some departments and product areas have tested nudging techniques through these projects and have obtained good results.

One of the main areas of work for NAV is to help people get jobs. Tystad & Kvamsdal (2018) conducted a project that looked into the potential of helping young people evolve their lives. He found that using a collection of nudging techniques affected the participants' amount of paid working hours. The study tested different nudging techniques, but reminders sent to the young participants were most effective. There was also a tendency that it affected the number of job applications sent out by the participants.

NAV also helps citizens return to work. When a person does not work for different reasons, the person can receive work assessment allowance. Research shows that when reaching the end of the work assessment allowance period, the probability of the person returning to work rises. However, further research suggests that this probability also rises by using intensives that do not have anything to do with losing the allowance, such as letters, phone calls, or getting called into meetings. This is the case for both work assessment allowance, but also health-related allowances (Kann et al. 2016). Additionally, the study about the transition between work assessment allowance and work mentioned that one must be careful regarding whom the nudges direct. It could, for example, be very degrading and not efficient for people suffering from a serious illness that cannot get back to work to receive these nudges. A point made regarding the effects of these nudges is that they are only measured over a short period of time. Further investigation of whether the effect of nudging is present over a more extended period of time should be conducted.

Norwegian citizens can apply for and receive parental leave benefits from NAV. This ensures that the parents have an income while on leave. Today, there are a total of 46 weeks of parental leave, meaning that if there are two parents, they can decide the distribution of these weeks to a certain degree. Both mother and father have a parental leave of 10 weeks each, and there are additional 26 weeks that the parents can decide how to split. Representatives from The Norwegian Confederation of Trade Unions (LO, "Landsorganisasjonen i Norge" in Norwegian) and The Confederation of Norwegian Enterprise (NHO, "Næringslivets Hovedorganisasjon" in Norwegian) states that a more balanced distribution of the parental leave between mother and father could lead to increased equality in the society (Lødrup & Melsom 2020). A study conducted by Mjøen & Singstad (2017) explored whether defaults and activation requirements could affect this division of parental leave. To sum up the study, it is stated that NAVs employees, as choice architects, could nudge and affect their users by making changes in their application portal. This was clear after the findings showed that changing the default values of the division of the parental leave would lead to the father taking more weeks of paternal leave, and hence the mother less.

The majority of the studies and results acquired from research regarding nudging in NAV do not have a digital perspective. As NAV wishes to primarily serve their users through their digital platform (Tystad & Kvamsdal 2018), digital nudging should also be of focus.

4.1.2 Design Manuals

When developing websites, NAV often uses developed manuals that contain guidelines for the graphical interface of its online solutions. There are two design manuals: one focuses on NAV's identity, and the other focuses on design for their online solutions.

NAV has created a design system from scratch that is used on all of NAV's digital platforms. This design system, an open-source react front-end framework, includes standardized components, icons, colors, and guidelines for typography and application forms. A framework like this creates consistency on the digital platform. Since NAV's services needs to be available for all citizens in Norway, they also have standards for universal design (NAV IT 2021a).

Further, NAV has a design manual that addresses identity (NAV IT 2021b). Guidelines for colors, illustrations, and logos are defined in this manual. They have a set color pallet and guidelines describing how they should be used (for example, what color to use to obtain necessary contrast in the interface). There are also guidelines for how illustrations should look. In addition, the guidelines cover which fonts and texts should be used.

Within this design manual, NAV points out that its values are to be evident, present, and solution oriented - and that this should be reflected on all platforms where NAV communicates, either if it is face to face, over the phone, or digitally (NAV IT 2021b).

4.2 The Case

The product area in NAV named *Illness in the Family* was the main focus when collecting data and understanding the potential for the research conducted in this thesis. This section provides information about *Illness in the Family* and essential aspects that needs to be considered in its digital solutions.

4.2.1 Illness in the Family

Illness in the Family is a product area in NAV concerned with benefits one may receive if someone in the family or someone you are close to are ill. The product area has several types of staff with tasks like case processing, technology development, digitalization (such as developers and designers), and project management. For NAV, several of the ongoing digitalization projects are concerning benefits under the area of responsibility of *Illness in the Family* (NAV 2020b).

There are six benefits under the area of responsibility of *Illness in the Family*:

- Attendance allowance in connection with a child's illness (from the Norwegian "pleiepeng for sykt barn").
- Care benefit (from the Norwegian "omsorgspenger").
- Training allowance (from the Norwegian "opplæringspenger").
- Attendance allowance for people over 18 years old (from the Norwegian "pleiepeng for personer over 18 år").
- Attendance allowance when caring for a person that is terminally ill (from the Norwegian "pleiepeng i livets slutfase").
- Basic benefits and assistance benefits (from the Norwegian "grunn- og hjelpestønad").

The purpose of the benefits is to help if one, for example, has to stay home to take care of a child with a disability or illness, if one needs guidance or training to take care of this child, or need to take care of someone who is terminally ill. This collection of benefits has its own section on the web page of NAV, where information and application forms concerning the respective situations that often arise together are collected. As an example, when having to apply for attendance allowance to take care of a sick child, one often needs to apply for training allowance as well.

The online portals in *Illness in the Family* contain information about who are qualified to receive the benefits, how to apply, and other relevant information. Also, the application forms themselves are also here (some digitally, some you have to download, print, and fill out on paper).

When entering *Illness in the Family*, the user can choose between being a private individual, an employer, or a partner. A partner, in this case, is often someone from the health sector, such as a doctor. The reason for this tripartite involvement is that when applying for benefits as a private individual, the application also needs to include documentation from the partner or the employer. The partner or employer can also, when necessary, upload relevant documentation on the platform. In addition, the information presented is different based on what type of user one identifies with. In this research, the main focus is on the private persons usage of the system.

There are several autonomous teams within *Illness in the Family*, and there are around 100 such teams in total in NAV. The teams mainly receive concrete orders that often support the transition from older to more modern systems. The different teams consists of different roles that vary between front-end and back-end developers, designers, writers, and product owners.

4.2.2 Users of Illness in the Family

Often, the users of the online services for *Illness in the Family* are parents or guardians of children that are ill or disabled. When having a disabled or sick child, one might experience several things to be challenging. To better understand the users' situation, NAV and *Illness in the Family* have created a list of 17 pain points that helps illustrate and categorize the aspects that might be difficult when being in this situation. NAV created these points to help its caseworkers get a better understanding of what problems the users of *Illness in the Family* face. This means that these are essential factors to take into consideration when designing the online solutions for NAV and *Illness in the Family*. The 17 pain points can be found in Appendix H.

5 Results

This chapter presents the results from the analysis of digital artifacts, interviews, and relevant documents. The location of the identified digital nudges and translations of the quotes and figures from Norwegian to English can be found in appendices I, J and K.

The results are structured by key themes originating from the interview categorization as described in section 3.3.2. The main findings will be presented at the beginning of each section. To conclude, the main results related to the objectives are summarized.

5.1 Nudging in the Public Sector in Norway

The topic of this section is findings relevant to nudging and digital nudging in the public sector in Norway. This includes use and concerns related to the said concepts. The main findings are presented in Table 10.

Table 10: Main findings related to nudging in the public sector

Main Findings

- The public sector has to consider other needs and factors than the private sector.
- It can be challenging for the user to separate between demands and encouragement presented by the public sector.

Person C used England and the USA as examples where a more systematic approach to digital nudging has been initiated. This was put in contrast to Norway, where the perception was that a more ad-hoc and less holistic approach is more common. It was stated by person C that *"there is definitely a lot of unconscious nudging in the public sector [in Norway]."* It was further suggested that the public sector in Norway could benefit from making their approach more offensive. This suggestion was also presented by person E, who explained that the public sector often does not dare to tell people that they should choose one alternative over the other.

Person D informed that the public sector has to maintain different needs and factors compared to the private sector. One general opinion amongst the informants was that there is a difference between nudging and advertisement and that the public sector should not cross this line; person D expressed that *"the public sector should never think that they should become Foodora."* This was reasoned by that they deliver a different service, and that they are not a private company. It might be challenging to prioritize and implement digital nudging when having to consider multiple factors and needs. This is because it would require various resources in respect to, for example, legal aspects and GDPR. Further, it was explained that other types of work are often prioritized as digital nudging is not required. Before wanting to nudge, the public sector needs to ensure that they communicate the correct information.

According to person B and G, another consideration the public sector needs to take is the separation of requirements and encouragement, as this is in many cases difficult for the user. Person G further explains that it is a considerable risk to have a faint line between these. Person D further states that reminders from the public sector are often interpreted as "you have done something wrong."

Models used for project management and development in the public sector often have to be adapted, changed, and interpreted to fit the public sector. Person D explained that this is because they are not designed to fit the public sector and its additional values and needs. This was also indicated

in the literature study, as no relevant guidelines or frameworks for digital nudging for the public sector were identified.

5.2 Level of Awareness of Digital Nudging in NAV and the Public Sector

Findings related to the level of awareness of digital nudging in NAV and the public sector will be the focus of this section. The main findings are presented in Table 11. In addition to the findings presented here, other findings presented in this chapter will indirectly reflect the level of awareness of digital nudging in various contexts.

Table 11: Main findings related to the level of awareness of digital nudging in NAV and the public sector

Main Findings

- Unconscious digital nudging is present in NAV and the public sector.
 - There is little awareness regarding digital nudging in NAV and the public sector.
-

Person C stated that *"Richard Thaler would probably say that in any form of communication, there is a form of nudging present. The presentation of a message will influence decisions."* Continuing this statement, the informant pointed out that it is important *"to raise awareness amongst those who communicate, in this case, the public sector, that the way things are structured have consequences."* Person G pointed out that *"one might not have been aware that one is nudging."* Furthermore, person C commented that one could separate between nudging that is conscious and unconscious and that it is evident that unconscious nudging is used regularly in the public sector in Norway.

Overall, person E and G agreed that there was little awareness regarding nudging in NAV. In cases where people are familiar with the concept, Person E informed that *"some think that it [nudging] fixes everything. Many people come to me and say 'Yes, you who are an expert on behavioral psychology, can we just fix and fix...' then there are several people that think of nudging as a quick fix, in my opinion. [...] But i also experience that it is quite little awareness around it [nudging], especially with having an understanding of how this can influence people. [...] My experience is that in NAV, one focuses on getting the info out correctly."* Person G pointed out that there is no training on how to utilize digital nudging, but they are aware that they need to be careful with it.

5.3 Goals in NAV

This section will present the relevant results related to the goals of NAV that are intended to guide the development of its digital solutions. This also includes the goals of *Illness in the Family*. The main findings are presented in Table 12.

Table 12: Main findings related to goals in NAV

Main Findings

- *Illness in the Family* has several goals: higher efficiency in case processing, digitizing application processes and reduction of inquiries for the contact center are amongst these.
 - *Illness in the Family* wishes to reduce person-years, which is planned to be reached by digitizing parts of the systems.
-

It was explained that *Illness in the Family* work towards several defined goals that they are required to have and complete. These goals are defined before initiating any work. Several specific goals were mentioned in the interview: efficiency in case processing, digitalizing application processes, and reducing the number of inquiries for the contact center.

When creating goals, they may, for example, measure how much time they spend on a case and deduce the potential for improvements. The basis of this can be experience or possibilities for automation. NAV uses a solution created in the 1970s with high maintenance costs for case processing. By 2021, NAV plans to have a new digital solution for this purpose. The specific measurement of the progress towards the goal is to measure the management costs of the old solution.

It was also informed that *"we have a goal of saving person-years in NAV."* As explained by person B, the departments performing the downsizing need to be sure that new digital solutions can compensate for the reduction of staff. Hence, the IT department needs to guarantee the completion of new solutions, and hence goals, within a specific time frame.

5.3.1 Efficiency in Case Processing

Person B explained in relation to increased efficiency in case processing that they require submission of all relevant documentation to process a case. This means that deferred submissions of documentation can cause delays. As illustrated in Figure 3 and 4, it is not clear for the user that it should strive to send all documentation when submitting the application instead of submitting it later. This does not comply with the goal. It might even work against it, as it can look like it is irrelevant when the documents are submitted. Using the nudging technique framing better might nudge the user towards uploading the documentation as soon as possible. Furthermore, they wish to reduce the amount of time the health staff spends to submit (correct) documents, as additional resources are required to have the health staff resubmit documents.

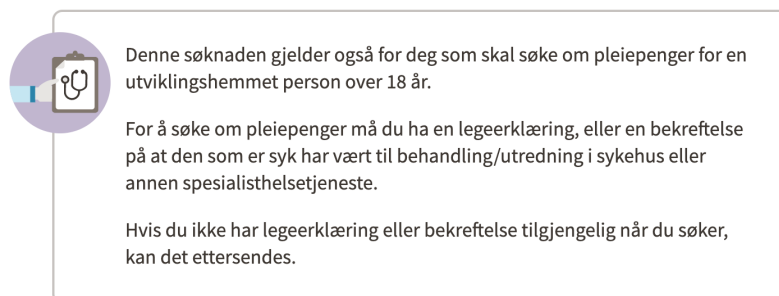


Figure 3: Information box concerning submission of documentation in an application form

Last opp legeerklæring

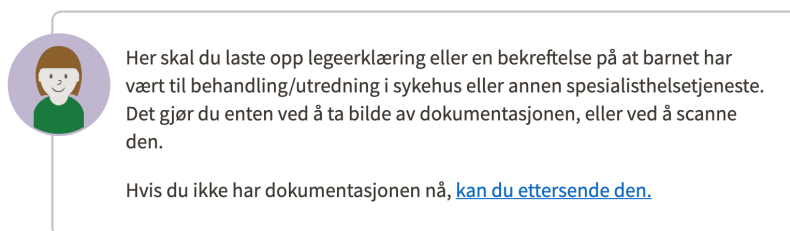


Figure 4: Information box concerning submission of documentation in an application form

Some benefits cannot be received unless the applicant fulfills specific requirements. As illustrated in Figure 5, when selecting "no", an infobox informs the applicant that its situation does not fulfill the requirements. Yet, the application can still be continued and submitted. The mapping for the two options is similar, as none of the options give more notable resistance. This can lead to case processors receiving applications unqualified for approval. This does not help achieve the goal of increased efficiency in case processing. If the applicant is not made aware that they do not qualify for the benefit, it could also lead to additional inquiries for the contact sender.

Har barnet en kronisk sykdom eller funksjonshemming?

Ja Nei

i Søknad om ekstra omsorgsdager gjelder kun for de som har kronisk sykt eller funksjonshemmet barn.

FORTSETT

Figure 5: Application form dialogue concerning whether you have a chronically ill or disabled child

After the presentation of the findings from the analysis this has been updated so that it is not possible to continue the application if the user selects "no". This is illustrated in Figure 6. This is clear feedback and stronger mapping, and the updates support the findings that there was a lack of this initially.

Har du et barn som har en kronisk sykdom eller funksjonshemming?

Ja Nei

i Søknad om ekstra omsorgsdager gjelder **kun** for de som har kronisk sykt eller funksjonshemmet barn.

Figure 6: Updated nudging, Figure 5

As shown in Figure 7, the user is informed that all documentation must be submitted before the case processing can start. As deferred documentation was a problem for efficient case processing,

this could be important information for the user to receive. This information is placed far down in the information overview, which can make it difficult to detect.

Når får du svar på søknaden?

Vi kan behandle søknaden din først når vi har mottatt all nødvendig dokumentasjon.

Se [saksbehandlingstiden](#) som gjelder for ditt fylke.

Figure 7: Information on information page concerning when you will receive feedback on your application

5.3.2 Digitalizing Application Processes

One of the goals was to increase the number of digital applications. *Illness in the Family* measures the number of digital applications per month and evaluates the trends. Further, they have a goal to reach a higher percentage of automation. To achieve this goal, they should nudge towards applying digitally. Figure 8 is an example of more prominent styling of the digital option compared to the paper option. Another informational nudge that could support the goal is illustrated in Figure 9 where the user is recommended to supply all information in the digital system. Further, Figure 10 presents the importance of using Adobe Acrobat Reader to fill out the form. This also nudges the user to complete the form digitally. These mentioned digital nudges could make it more likely that the user selects the digital option, and it could potentially make the process easier and faster to complete.

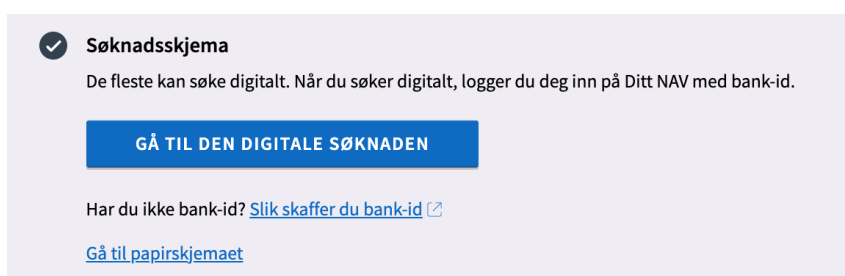


Figure 8: Options for how to submit the application on information page

Vi anbefaler at du sender søknader eller andre dokumenter til oss digitalt. Dette er både sikrere og raskere. Du kan sende alt av papirer digitalt til oss når du har bank-id. [Slik skaffer du bank-id](#)

Figure 9: Information on information page concerning that submitting documents digitally is preferable

4: Last ned skjema NAV 09-12.05

Søknaden må fylles ut og undertegnes.

- ! Det er viktig at du bruker Adobe Acrobat Reader når du skal fylle ut skjemaet.
[Last ned Adobe Acrobat Reader](#) (lenke åpner i et nytt vindu).

LAST NED

Figure 10: Information concerning that filling out the application digitally is preferred

One of the informants mentioned that inconsistency concerning styling and placement could be a type of nudging - that is, consistency, or the lack of it, could affect and nudge users' choices. As an example of a lack of consistency, see Figure 8, 11, and 12. Following the design principles, platform conventions should be followed.

Applicants are first presented with the choice architecture illustrated in Figure 11 in the application for attendance allowance for people over 18 years old. This means that the option to apply digitally is not enhanced and hence does not nudge the user towards selecting this option. Subsequently, when choosing either option, the applicant is directed to a new page where the user can choose how to apply again. Here, as shown in Figure 12, the option to apply digitally is more prominent. This is not consistent with the first choice architecture presented, which means that there is a lack of consistency.

Kort fortalt om pleiepenger for personer over 18 år

- ✓ Pleiepenger er for deg som må være borte fra jobb fordi du skal være sammen med en utviklingshemmet person over 18 år. Personen er i tillegg svært alvorlig syk og trenger din omsorg og pleie hele tiden.
- ✓ Hvor mye pleiepenger du får avhenger av hvor mye du kan jobbe og hvor mye den du pleier er i et omsorgstilbud. Omsorgstilbud kan være omsorgsbolig, BPA (brukerstyrt personlig assistent) eller andre organiserte tilbud.

Vil du søke nå?

Har du bank-id, kan du søke digitalt. [Slik skaffer du bank-id](#)

SØK DIGITALT

SØK PÅ PAPIR

Figure 11: Placement of application buttons



Figure 12: Options to add attachments digitally or by post

5.3.3 Less Inquiries for the Contact Center

Illness in the Family also wants to reduce the amount of inquiries for the contact center. As suggested by person B, this could be achieved by making it straightforward for the user to find the correct information and status of their case online. This implies that several of the inquiries reaching the contact center are related to these needs. Another factor that could be important for this goal is to have application forms with good dialogues.

It may be challenging to find the application form when entering the information page for care benefit. This might not support the goal of decreasing the number of inquiries to the contact center. There is no element in the menu, nor any implication as to where this can be found elsewhere. The user has to scroll down or select "When can you apply for extra days?" from the menu. Scrolling down could make it more likely that the user reads the relevant information before applying. On the other hand, it might help the users if an element in the menu is more directly referring to where they can find the application, as this is not clear.

5.4 Nudging in NAV

The findings related to nudging and digital nudging in NAV is presented in this section. This includes use and awareness. The main findings are presented in Table 13.

Table 13: Main findings related to nudging in NAV

Main Findings

- It is difficult to implement nudging and make substantial changes in NAV, because of the amount of users they have and the amount of factors that needs to be considered.
 - NAV is nudging their users, possibly not deliberately, but they can not say that they do not nudge.
 - Users struggle to separate encouragement from demands, and they are scared to provide incorrect information to NAV.
 - Neutralizing the choice architecture could possibly be the first step when improving digital nudging in NAV.
-

Several informants mentioned that the size and impact of the organization make it challenging to initiate the implementation of digital nudging. Person D pointed out that NAV has a large volume of information they need to present for the users, and NAV must create services for everyone. In addition, it was important for person D to emphasize that *"NAV does not really want to receive many applications, but it is not that they do not want applications either. Because that is our mission. We are supposed to take care of the citizens, their requirements, and rights."* Furthermore, person D highlighted that the correct information has to be in order before they can start nudging the users. The informant continued by pointing out factors that make it challenging to implement nudges. This includes laws like GDPR, other legal aspects, and professionals within other relevant areas, which all play a significant role in all changes within the organization. This was pointed out by person F and G as well.

It was claimed that NAV has difficulties making digital nudging a priority. However, some areas in NAV have started exploring it. It was explained by person D that some areas in NAV that deliver services for employers have created test pages with digital nudging by using the technique social influence. This includes scenarios by presenting statistics related to other employers in similar situations. This is something the employers have expressed that they want. Further, person D said that the employer should be informed why this is relevant and what value it brings to them. NAV has also experimented with nudging in relation to sick leave and that returning to work earlier than expected does not require an update of information to NAV (NAV 2021). It is not clear if this nudging was digital or not. Nudging was mentioned in NAV (2021), but not in the corresponding document produced in 2019. This suggests that there is a growing interest for the concept. Additionally, it could also imply that they are exploring the potential of digital nudging as well. However, it is for now only a small section in the report.

On the other hand, person G expressed that exploring digital nudging is not a priority in other areas in NAV. It was pointed out that other areas in NAV have to focus on, for example, informing the user of new or updated laws, digitalization, and other technical improvements before they can prioritize digital nudging. However, it was also mentioned that NAV is researching nudging to build a knowledge base. As explained, the project related to the modernization of ICT in NAV is concerned with modernizing the solutions for users, case processors, and other involved parties for specific benefits (NAV 2020b). As this is the main priority, there might not be resources left to focus extensively on digital nudging.

Person E stated the following: *"I think we do it [nudge users] anyway, but that it is unintentional, and I think that is worse. Then I am thinking that we can not say that we have not started to nudge users, because we are. We are nudging with fear and dread, [...] we have to nudge in a way that motivates by simplifying and clarifying."* As several of the identified nudges in the analysis of

digital artifacts could lead to unintentional consequences, it might seem like NAV is indeed nudging users unintentionally. Adding to this, it was explained that people are scared that mistakes they make can have legal repercussions.

Person C, D, and G expressed that their impression is that NAV's users are struggling with separating encouragement and demands. Person D stated that *"if NAV says 'this is smart to do', it is perceived as 'you have to do this'."* Further, person G said that it is essential that NAV uses suitable language when communicating with users, particularly with implementation of digital nudging. For example, it was pointed out that when a person is unemployed, they might be nudged too hard. This could be done by formulating sentences too strictly, using phrases like "you have to" or "you should" instead of using a softer formulation like, "could you please." If they are going to nudge people to return to work, it is important for NAV, as stated by person G, that they create "softer" nudges. This was particularly important when trying to nudge someone to do something they are not legally required to do.

Person C pointed out the importance of ensuring that no one is pressured into doing something they do not wish to do. This could be, for example, a university degree - people could be nudged not to drop out, but for some, the decision to drop out might be the right one. This problem is further highlighted by the previously mentioned problem that many users experience difficulties related to separating encouragement and demands. Effective digital nudging could portray encouragement as demands, and this could lead to people experiencing pressure. It was further explained that it could also be difficult for the user to understand their power to decide when the digital nudging comes on top of encouragements and demands. Person G exemplified this with health. The individuals themselves know their limitations best and could generally use their power to decide how hard they should push themselves. However, if they are not able to separate the encouragement through digital nudging from demands, they might experience negative consequences.

Person E stated that *"and then there is this about micro steps. You can not achieve everything at once"*, implying that they have to prioritize. According to person C, the first step for NAV when it comes to nudging should be to make the choice architecture neutral and remove unintentional nudging with unwanted consequences. This informant was involved in the research conducted on changing the default setting when dividing parental leave in NAV's systems, which is described in section 4.1.1 (in the paragraph "Nudging in NAV"). This research was presented as an example of how effective neutralizing the choice architecture can be.

5.5 Illness in the Family

Data acquired in the case study related to *Illness in the Family* is presented in this section. A list of the main findings is presented in Table 14.

Table 14: Main findings related to Illness in the Family

Main Findings

- Presenting correct information that covers all cases is essential for *Illness in the Family*.
-

Person D worked in *Illness in the Family* when the online services were initially created. The informant explained that nudging was not discussed directly at that point, but conversations regarding how they can provide quality information based on your situation when applying for benefits were brought up. However, this was not implemented. Most of the work instead focused on information, presentation of information, and that the forms were structured in a logical order.

The first thing the user sees when entering attendance allowance is a small frame with a summary

of information and some buttons, where one of them takes the user to the digital application form (as shown in Figure 11). The buttons for starting the application are placed above important information concerning, amongst other things, required documents. The path of least resistance is to go straight to the application before reading this information. Person F explained that the summary of how to apply for benefits and the buttons, as shown in Figure 11, are placed on top of the information page as a conscious decision to make the application form more accessible for users that has applied several times before. This contributes to emphasize the importance of the order of elements in relation to nudging. Information presented in Figure 7 and Figure 9 are also examples where the information should have been available at an earlier time. This is because they contain information about the case process time and submission of relevant documents, which is relevant information for the user to have before applying.

Furthermore, person D explained that the insight work initially conducted explored where users experience difficulties when interacting with NAV. Person F who currently works in *Illness in the Family* said that this work is still in progress. They are in contact with all actors involved: doctors, employers, and applicants. This insight is collected through conversations and Hotjar. Hotjar is a web behavior analytic tool used to observe how people interact with web pages. Even though person D and F expressed that insight about the users is important, person F further informed that *“I have experienced that one often spends so much time on gaining insight that one does not get the work done. Time and money runs out, and then you are left with a report. This is not in the best interest of the user, nor NAV, as they need good solutions right away.”* Also, person F explained that there are several changes in the data structure and digitalization of the systems related to the system modernization. In relation to these updates, little user insight work is conducted. A possible explanation for this was that the knowledge and experience of the employees in NAV makes this redundant work.

Person D and F expressed that a lot of work was put into the presentation and wording of the information on the web page for *Illness in the Family*. Moreover, person F pointed out that the copywriter needs to consider legal aspects when composing the information. Everything has to comply with the laws and should preferably cover all cases.

It was stated by person C that nudging cannot fix everything. The interview with person F presented a good example of this: *“it might be that they experience the application as hassle-free [...] and submits, thinking ‘yes, this went well’, [...] and then you get a letter saying ‘no, you will not receive that much [...]’, and then they are boiling with anger, but we do not see that.”* Person F continued to explain how they only communicate with the user before and up until the application is submitted. However, it is stated that they would like to be present through the whole process through their online services as well. However, this was explained as complicated because the process is, at this time, both digital and non-digital.

5.6 Nudging Potential

This section presents results related to areas of potential for nudging and digital nudging in the public sector. These results were of particular relevance related to what types of digital nudging are relevant for the public sector in Norway (RQ2). The main findings are presented in Table 15.

Table 15: Main findings related to nudging potential

Main Findings

- The potential could be greater for nudging small decisions compared to more significant decisions.
 - The public sector could focus on conscious decisions instead of beneficial decisions.
 - For NAV, there is great potential of improving communication and the submission of documentation.
-

NAV (2021) mentions concerns related to power of decision and disempowerment for the user in relation to a more proactive public sector, which means that these concerns are important from several perspectives.

Person C explained that everyone can be inattentive, "suffer" from biases and procrastinate. This means that most people can benefit from (digital) nudges to help them make better decisions. It is not about being smart or not - most people can identify several decisions where they wish they had chosen differently. Person D expressed a thought regarding that the potential for nudging decisions where an extensive cognitive process has happened before is not as great as compared to less thoughtful decisions. Further, several informants said that nudging multiple small decisions is better than nudging significant decisions. Person D explained that instead of focusing on directing towards a beneficial decisions by using nudging and hence deciding what the beneficial choice is, the focus could be on conscious decisions.

Person E believed that nudging people to make fewer mistakes will lead to increased efficiency. That can be correct, as wrong information in applications will require additional resources to identify and fix for both the case processors and the applicants. Wrongful information can also include insufficient documentation. Further, it is also possible to decrease the number of complaints by improving the collection of documentation, and early and targeted collection of documentation is important to start the case processing (Mandal & Dyrstad 2017). This can be improved with digital nudging and, for example, informational nudges.

Person C believes that there is room for improvement with all communication between the public and the public sector, and this is potentially highly relevant for NAV. This corresponds with the digital nudges identified showing the most potential for mapping, framing, and priming, that is, informational nudges. In particular, this can be important to reduce the amount of complaints received as results of case processing. Improving the general communication, individual justifications for the case result, and having better information for the user can help reduce this (Mandal & Dyrstad 2017).

After the presentation of findings from the analysis of digital artifacts for person A and B, the information in Figure 4 was updated. The new phrasing is presented in 13 below. This is an example of improved framing and confirms that there is potential for implementing more beneficial informational nudges at NAV.



Last opp legeerklæring



Her skal du laste opp legeerklæringen. Det gjør du enten ved å ta bilde av leggerklæringen, eller ved å skanne den. Vær nøye med at all tekst er med, inkludert legens signatur.

Vi kan ikke behandle søknaden din før vi mottar legeerklæringen. Hvis du ikke har legeerklæringen tilgjengelig nå, anbefaler vi at du venter med å søke til du har den tilgjengelig. Hvis du ikke kan vente med å sende søknaden, kan du fortsette uten legeerklæring, men da må du ettersende den så snart som mulig. [Her får du veiledning til hvordan du ettersender dokumentasjon.](#)

Figure 13: Updated version of Figure 4

A new feature also implemented after the presentation of the findings is presented in Figure 14. Here, the user is informed of the significance of submitting the documentation as soon as possible. This also endorses the suggestion that there is potential to use informational nudging better and that there is room for improvement in this area.

Har du fått legeerklæring fra sykehuslege eller lege i spesialisthelsetjenesten?

Ja

Nei

i For at du skal få svar på søknaden din så raskt som mulig anbefaler vi at du sender legeerklæringen samtidig som du sender inn søknaden. Hvis du ikke har legeerklæringen tilgjengelig nå ettersender du den så snart du kan. Vi trenger den for å kunne behandle søknaden din.

Figure 14: New application dialogue concerning document attachments

It is stated that NAV can have unwanted and unintentional nudging when the language is complicated, as this could lead to people not understanding and using their rights. This is confirmed by the 17 pain points (found in appendix H), where NAV's language is mentioned as a problematic factor. This could be particularly important as NAV also reach users with lower language competence. To counteract this, simplifying the message could be a course of action. These general ideas were presented by person C. However, in the case of decision letters, the need for simplification can come in conflict with the legal requirements of the information (Mandal & Dyrstad 2017).

Person G suggested that nudging can help users when they need to perform a new task and hence change their mindset. This could be, as exemplified by person D, to solve problems in new ways. Further, person G explained that this often happens when a user experiences big life changes and transitions, which is arguably when a person needs to interact with *Illness in the Family*. The primary responsibility is placed with the user in these cases: they have to navigate a large volume of information and services. With this, person G suggests that digital nudging could provide additional support and guidance.

Person G also suggested using digital nudging to flatten the differences between the resources

and competence of the supervisors in NAV. In today’s situation, the user might be a bit passive and dependent on their supervisor and the amount of help it can provide, how good the user is at seeking out information itself, or acquaintances that have been in a similar situation. It was suggested to use the knowledge about different user groups to provide personalized nudges with information such as ”there are now new courses available. Could this be something for you?” or suggest that they could talk to an occupational psychologist to receive career counseling.

Person D underlined that from NAVs perspective, there is a considerable difference between the user groups of the digital services that needs to be considered and it is essential that NAV creates solutions that suit all of them. There are employers at one end, who deals with NAV because of their job and employees. On the other end there are parents with disabled or ill children who use NAV to acquire special aids or receive money to pay bills. The latter might include more complicated cases. An important note from person D was that one needs to be careful when dealing with vulnerable users. However, as suggested, this might be where nudging is needed the most. It can be difficult to make beneficial decisions with information overload, lack of resources, and a temporarily reduced cognitive ability because of a demanding life situation. It was also pointed out that it is crucial to have knowledge about the nudges to nudge them in desired directions. Person D explained that parents with ill children expressed that they have too much on their plate and want NAV to help with the overload. The 17 pain points (found in appendix H) identified for this user group could help to identify what areas have the most potential for nudging.

To present the findings regarding concrete examples of nudging potential in NAV, they have been categorized into different areas, as shown in Table 16. The areas are *digitalization*, *efficiency*, *economical savings*, *user satisfaction* and *human resources and inquiries*. Some of these areas and cases will overlap. If so, they have been placed in the category that is seemingly most appropriate.

Table 16: Examples of nudging potential in NAV

Category	Description
Economical savings	When a person receives sick leave for two weeks, a common perception is that you are entitled to the entire period and that taking the full two weeks is beneficial from a health perspective. In this case, person C believes there is potential to use nudging to make it clearer that the two weeks are not necessarily a recommendation or right and that if one feels better before, one could (and possibly should) return to work.
User satisfaction	NAV could use nudging to relieve the load placed on the users by providing relevant information. For example, if someone gives birth prematurely, NAV knows what special aids they are likely to need. Information about this could be brought to the user, instead of the user having to find it themselves.
User satisfaction	One can achieve a more inclusive working life by fighting systematic discrimination by digital nudging. This could be achieved by, for example, informing employers that there is a statistically lower sick leave for people over 50 years old to fight age discrimination.
Efficiency	The interview with person F revealed that the users are mainly struggling with uploading attachments to their applications. The troubles include file formats and quality. It was suggested to use nudging to fix this problem.

Although several areas with great potential for digital nudging was identified it is, according to

person C, important to remember that nudging cannot fix all problems in the world.

5.7 Implementation and Guidelines

One of the objectives of this thesis was to create guidelines adapted for the public sector in Norway. Findings directly relevant for these and the practical implementation of digital nudging are included in this section. These findings mainly include subjective thoughts and opinions collected in the interviews as triangulation was deemed difficult. The main findings are presented in Table 17.

Table 17: Main findings related to implementation and guidelines

Main Findings

- A digital nudge should not have potential to increase or decrease the possibility of receiving benefits.
 - Guidelines for digital nudging should include concrete examples.
 - The direction the user is nudged should be decided by scientific evidence, user needs, the public's needs or a strategy.
 - The nudges should be designed in a way that makes them receivable for different users.
 - Transparency could be important in relation to digital nudging in the public sector.
-

Person C stated that one should have scientific documentation to show that the direction one is nudging someone towards is beneficial. Further, the direction should not be something that changes with the season or be political, and it should be in the best interest of the society or the user. Person E pointed out situations where the needs of society and the individual are contradicting. What direction do you nudge in these cases? It was by person C suggested that if the sum of benefits for the society is more significant than the individual's effort, the nudge could be justified. This is something that should be discussed and considered case by case.

Furthermore, person D suggested that one should also obtain a long-term perspective. The opinion of person E was that user needs or a strategy originating from the organization, preferably both, should determine the design and purpose of the nudge. This should not be determined solely by the choice architect.

Person E explained the following scenario. NAV often wants to nudge the users into performing new actions. In order to accomplish this, it is crucial first to cover the user needs and let them perform their primary tasks efficiently. If not, stress could hinder the potential nudge. Subsequently, NAV can start thinking of the right time to nudge. This was explained by using the term Kairos. Kairos is, in this context, explained as the correct time where the user is receptive to the nudge.

For the user, it should be easy to make a beneficial decision with little effort. To achieve this, one could use clear feedback and an uncomplicated structure of the digital solution. Person E further described this as tunnel design: it should not be necessary to take detours to think or question, for example, what a word means. An additional point made by person E is that transparency about digital nudging is important: *"you should be clear about what you are trying to influence."*

It is important to create nudges that are non-discriminatory and receivable for different people. As an example from person G, not everyone speaks Norwegian. In addition, some might have disabilities meaning that they may not be able to receive the nudge in the same manner as other

people. This means that language and the delivery method of the nudge is also important. As discrimination is a potential problem and consequence of algorithms that in the future can be used with digital nudging, NAV must have an ethical and responsible approach towards data-driven services (NAV 2021). This is further elaborated in section 5.8.

Person F believed that it can be confusing for the user to experience a high volume of digital nudging in one section and none in another. From a user’s perspective, the experience is often that NAV is one entity and not different product areas such as *Illness in the Family*. Hence, it could be important to have a somewhat holistic approach to the concept.

According to person C, it is essential to reflect on how important communication and information guide and affect decisions. Person C continued by stating that a good start is to examine if there are any skews concerning this in existence. One should ensure that the choice architecture is neutral where one wants it to be. However, research claims that there is no neutral way to present options (Weinmann et al. 2016a). An example brought up was the case concerning unintentional nudging regarding the distribution of parental leave described in section 4.1.1.

Figure 11 is an example of neutral choice architecture. On the landing page when entering attendance allowance in connection to a child’s illness, one is presented with the option to either apply digitally or on paper. Both the buttons have the same styling. In this case, NAV is presenting a neutral choice architecture. However, in this situation, NAV has a clear opinion regarding which direction they wish to nudge the user; to apply digitally. In situations like these, one should focus on implementing intentional digital nudging that does not contradict the goals. Overall, this means that the focus should not only be on neutralizing choice architecture on NAV’s solutions; it should also be to improve where the direction is clear.

In terms of guidelines, several suggestions were made. Different roles (i.e., designers, copywriters, and front-end developers) might need different types of guidelines. Further, the guidelines could contain main principles and a checklist with 7-10 points. It was also mentioned that it is important to remember that the public sector is big, and it is difficult or impossible to create guidelines that will fit everyone. It is not possible to solve all problems in the same way for all organizations in the public sector. Several informants expressed that there should also be some examples similar to the universal design examples provided by the Norwegian Digitalisation Agency. Having something concrete could help make it easier as the knowledge of implementation of digital nudging might not be present. This could also make it more feasible to have an experimental approach to implement, deploy and monitor the effects afterward.

5.8 Personalized Nudging

This section presents findings relevant for personalized nudging and data collection. This includes potential discrimination. The main findings are presented in Table 18.

Table 18: Main findings related to personalized nudging

Main Findings

- Additional considerations have to be made when designing personalized nudges.
 - The users often want information adapted to their situation.
 - Personalized nudging might make the power of decision unclear.
 - Personalized nudging might be discriminatory.
-

In general, most informants agree that personalized nudging has great potential. Person C does not see anything wrong with having targeted nudging, either on a group level or possibly individual level. The informant also mentioned that with this possible individuality, one has to address other problems. From the perspective of NAV, person F informed that they have several user groups with rare characteristics. Thereby, if the nudge is based on social influence and statistics related to one of these user groups, the nudge could make it possible to identify other users in this user group. Person F experiences that NAV is careful with using and collecting identifiable data. Further, it was also mentioned that providing personalized nudging is in some ways unequal treatment. Person C stated that one should be careful with personalized nudging as the principle of equality is strong in Norwegian society. Person G expressed that the more individual a nudge is, the more worries concerning discrimination arises.

Personalizing information could be discriminatory, as one makes assumptions about the individual based on personal data. The creator of the nudges could risk continuing discrimination or biases based on their beliefs, intentional or not. Similar problem statements also exist in the field of AI. As these problems are called attention to by person G, the informant suggests that *"it is almost better to give everyone the same [nudge], even if that is also wrong, that is at least not active discrimination."* This is something NAV has already started doing, as explained below. This might be better, as *"it is not a very discriminating nudge, it is quite safe that way."*

One argument favoring personalized nudging, presented by person C, is that people are different and think and respond differently. As an example, person C suggested communicating differently with different groups by using, for example, targeted information campaigns. An example of such a user group is users who are not utilizing all of their rights.

It is explained by person D and E that NAV often does not have the amount of personal data that the users believe. In this context, the once-only principle (explained in section 2.2.2) was mentioned. Person D reflected on whether it is desired that the different organizations in the public sector share data about the users. This was then related to the distribution of power between the users and the public sector. A possible approach to achieve personalized nudging without personal data is for the user to provide the missing information themselves. This could also reduce the concerns related to personal data collection for NAV.

Person E thinks that the data required to design personalized nudges is present in NAV, but it is unstructured as it is in the form of, for example, experience. Furthermore, person E explains that people occasionally make inquiries to the contact center to see "what concerns me?". This was reasoned with that if the numbers and information on the web pages do not relate to the recipient, it is difficult for the recipient to see the relevance of it. Furthermore, the informant said that a person will often feel looked after if the content is personalized.

It is the impression of person D that the users want nudging to assist them in making better decisions and that there is great potential here. One could, for example, assume that many applicants would submit their documentation at an earlier time if they were aware of the effects this can have on the case processing. Not only do they wish for it, but it is in many ways also expected. The users could ask *"Why are you not like Netflix?"* Users of Netflix are used to content that is adapted to their preferences and needs (NAV 2021). The informant deducted that this could be because *"this is the digital behavior now."* Moving standardized information from a brochure to online services can lead to the users wishing for, and perhaps demanding, that this information is personalized and adapted to their situation (Sand et al. 2020). Organizations and businesses are in an increasing degree using data to collect knowledge and provide better and more efficient services. It is anticipated that the expectations towards a similar development in the public sector will increase in parallel. There is a possibility that the public sector may take inspiration from, for example, Netflix, but use the users' life situation and needs as a foundation (NAV 2021).

Person G explained that there is already some personalized nudging present on NAV's online solutions. When one receives work assessment allowance and sign in to NAV, one will have the option to enter a page named something similar to "your absence." If one does so and has received the benefit for a set amount of time, an encouragement similar to "do you need more personalized follow-up?" or "do you need more follow-up?" will appear.

5.9 The Public’s Opinion and Level of Awareness of Digital Nudging

Results regarding the public’s opinions and level of awareness of digital nudging are presented in this section. The main results are presented in Table 19. As the guidelines should ensure that the trust-based relationship between the public and the public sector is maintained, findings related to this were considered to be of importance.

Table 19: Main findings related to the public’s opinion and level of awareness of digital nudging

Main Findings

- A selected user group has indirectly expressed a wish for digital nudging
 - The public’s awareness of digital nudging might depend on the context
-

Nudging exists in different contexts. One context that is very different from the nudging one finds in the public sector is, for example, in grocery stores where candy is placed close to the register. Further, person C’s opinion was that people are, in general, aware of nudging in these contexts. Marketing and advertisement are also contexts where person C finds it likely that people are aware of nudging. Further, the informant guessed that in the context of the public sector, many people might not expect, believe or assume that their choices are being nudged.

Person D has conducted several interviews with the users of NAV’s websites, aiming to identify their needs and how these should be met in the online solutions. These interviews have given insight that suggests that some user groups want functionality and help that can be described as nudging. The mentioned wishes are in relation to the availability of information and personalized content. Person D summarized these findings from the interviews by stating that the user wants nudging on the online platforms in question. However, person D also pointed out there are most likely differences amongst the users concerning when it is OK to nudge.

5.10 Main Results

Table 20 includes a list of the main results obtained in the case study.

Table 20: Main results obtained from the case study

Main Results

- Unconscious digital nudging is present in NAV and the public sector.
 - There is little awareness regarding digital nudging in NAV and the public sector.
 - The potential could be greater for nudging small decisions compared to more significant decisions.
 - The public sector could focus on conscious decisions instead of beneficial decisions.
 - A digital nudge should not have potential to increase or decrease the possibility of receiving benefits.
 - The direction the user is nudged should be decided by scientific evidence, user needs, the public's needs or a strategy.
 - The nudges should be designed in a way that makes them receivable for different users.
 - Transparency could be important in relation to digital nudging in the public sector.
 - Additional considerations have to be made when designing personalized nudges.
 - The users often want information adapted to their situation.
 - Personalized nudging might be discriminatory.
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6 Discussion

The following section will interpret and discuss the results obtained in the case study. The results will be explored in relation to the literature study and their context. Further, their significance in the area of digital nudging will also be assessed. Conclusively, implications of practice and evaluation of the research will be presented.

Repetition of Objectives

The discussion will be structured based on the research questions which originates from the aim and objectives for this thesis. Before the discussion begins, it is considered useful to repeat the objectives:

- **Objective 1:** Analyze the level of awareness and utilization of digital nudging in the public sector in Norway.
- **Objective 2:** Create guidelines adapted for the public sector that can be applied when implementing digital nudging in the public sector in Norway.

6.1 RQ1: What is the level of awareness and utilization of digital nudging in the public sector in Norway?

As one of the informants stated, it might be useful to separate between conscious and unconscious digital nudging. To further conduct the discussion more precisely and with nuance, four concepts were specified: unconscious and conscious nudging, and intentional and unintentional nudging. These concepts are defined in Table 21.

Table 21: Definition of terms relevant for the discussion

Concept	Description
Unconscious nudging	When one is unaware that nudging is implemented. Describes the action of implementing an unintentional nudge.
Conscious nudging	When one is aware of nudging and implement it with purpose and intent. Described the action of implementing an intentional nudge.
Unintentional nudging	A nudge that is implemented unconsciously. A consequence of unconscious nudging.
Intentional nudging	A nudge that is implemented consciously. A consequence of conscious nudging.

Despite several candidates stating that there is little awareness related to digital nudging, most informants are aware of and have discussed the possibilities to affect the user through graphical user interfaces and information. One informant stated that for attendance allowance in connection to a child's illness, they paid much attention to the structure of the page and information composition. This can be categorized as digital nudging according to the design framework defined in Table 6. In light of this, it seems like there is an existing awareness, at least amongst designers, that it is possible to affect and guide the user through digital interfaces - but they do not refer to it as digital nudging. What is not clear is if they are aware that *all* interface design will affect the user (Weinmann et al. 2016a).

The study presented in section 4.1.1 that explores the division of parental leave found that the original default value nudged the mother to have a longer period of parental leave than the father. The results show that NAV had no intention to nudge the mother to take more parental leave

than the father, as an informant stated. This is also supported by the changes NAV made when they became aware of it. Thereby it is claimed that the level of awareness related to unintentional and unconscious nudging is low. Despite that NAV did not intentionally nudge the mother and father, it could be that the developer or designer that defined the default value did it based on their prejudices, either consciously or unconsciously. This continuation of possible biases is further described in the discussion of RQ2 in section 6.2.

There are further indications that support the explanation that there exist unclarities regarding the concept of digital nudging. All informants were asked to define digital nudging at the beginning of the interview to establish a common foundation for the continuation of the interview. Even though all informants described it correctly, the perspectives differed. Additionally, in relation to the conscious use of digital nudging, they paid much attention to things that could be described as digital nudging but still stated firmly that the awareness is low. Hence, if giving an alternative term instead of digital nudging, the opinions related to the level of awareness might be different.

User needs and strategies set the direction and focus for the choice architects in NAV. Further, the strategy and user needs do not consider nudging directly, and this might be part of why they have implemented unintentional nudges. It may also explain why they are not familiar with the concept. In addition, they use design manuals as a base to ensure, for example, consistency in color pallets. This could take the focus away from considering how the design is actually affecting the users.

The results indicate that NAV uses intentional digital nudging in some cases but without referring to it as such. Hence, for NAV, it is argued that the awareness of unconscious nudging is low, and the awareness of conscious nudging is somewhat higher.

It is fair to assume that all designers, also those working in other parts of the public sector, have knowledge about how design can affect the decisions and behavior of the user. This deduces that other employees in the public sector in Norway are aware of conscious digital nudging, at least in practice. In relation to unconscious nudging, the data foundation acquired in the case study is insufficient to make statements about the level of awareness. This is due to the only supporting arguments being statements provided by informants without direct knowledge concerning the situation in the public sector in general. However, as NAV has a large and motivated IT department, it is unexpected that other public organizations are significantly better than NAV in relation to unconscious digital nudging. In addition, as the literature showed, there is little research conducted on digital nudging in the public sector, and there is no governmental nudge unit in Norway. With this perspective of the current situation, it is claimed that the level of awareness of unconscious digital nudging is also low for the public sector in Norway.

As mentioned, the analysis of digital artifacts implied that NAV has unconscious nudging present in its online solutions and has low awareness concerning this. Therefore, the study demonstrates a correlation between utilization and awareness of digital nudging. As the awareness in regards to conscious nudging is unclear, the correlation may be stronger between unconscious nudging and low awareness. These findings are significant as they show that increased awareness of unconscious nudging can be more beneficial than focusing on conscious nudging for the public sector.

6.2 RQ2: What types of digital nudging are most in line with the values of the public sector in Norway?

The results show a generally positive attitude towards utilizing digital nudging more actively in the public sector in Norway. Several types of digital nudging can be relevant, however, not without careful consideration. This section discusses issues and potentials related to specific types of digital nudging that can improve digital platforms in the public sector in Norway.

6.2.1 Informational Nudging

An informant pointed out that all communication nudges people. It was further suggested that information and communication have the most considerable potential for nudging in the public sector. Additionally, several informants emphasized the importance of presenting correct information. The trust the public in Norway has in their government is generally higher than in most other countries (Christensen et al. 2006) and is important to maintain. Following this, informational nudging is the least invasive technique for nudging people (Hagman et al. 2015). Thereby, one of the safest and most appropriate ways to nudge for the public sector is through communication and information.

From this follows that mapping, priming, and framing, as described in Table 6, could be the most relevant nudging techniques for NAV. It is further stated that a substantial amount of the unintentional nudging existing in NAV is related to information. This is also indicated through the analysis of the digital artifacts, as a majority of the unintentional nudges identified were mapping or framing. Although nudging through information might seem manageable for NAV, the additional aspects they have to consider could place restrictions.

It was mentioned that the information presented by NAV is often complicated to understand and that this can result in unintentional nudging. As suggested by the design principles from Nielsen (1994), there should be a match between the system and the real world, and the user's language should be used instead of "internal jargon." One suggestion was to simplify the information to counteract this unintentional informational nudging. This would, however, make it challenging to cover all edge cases. One could also argue that simplifying and shortening the information could make it challenging for the user to make an informed decision. On the other hand, it is also challenging if the information is too complicated and extensive. One could further argue, as stated by Damgaard & Nielsen (2018), that informational nudges work best for those who lack information. As several users struggle with information overload, providing more information might not be the most constructive approach. Although there are restrictions towards the use of framing, priming, and mapping, these techniques still may be the best approach to counteract. One could from this argue that the most significant potential for NAV concerning digital nudging is to remove the unintentional informational nudging by rephrasing the information, potentially focusing on design principles as a supplement to digital nudging.

The public sector in Norway is trust-based and has strong collectivist and egalitarian values (Christensen et al. 2006), as also stated by an informant. A concern mentioned for the public sector is that they should be sure that they are not deceiving the users. The limit between the acceptable influence of users' behavior and manipulation is not always clear, and influencing users' behavior without proper ethical considerations can harm the existing trust-based relationship in NAV (NAV 2021). This issue is also relevant for the public sector in general. It is also a safe assumption that the presentation of correct and complete information is of high priority in other public organizations. This gives reason to believe that informational nudges have the biggest potential and relevance also for the general public sector.

As stated by an informant, NAV cannot prioritize nudging, as *correct* information is their primary focus. Nevertheless, it should be considered, as the order and presentation of information is already (unintentionally) nudging the user. This underlines the importance of conscious implementation.

NAV is already nudging the users based on fear, according to an informant. This might make the difficulties of separating encouragement from demands more substantial and challenging, as

people are scared of making mistakes by, for example, interpreting demands as encouragement or wrongfully or not fulfilling the requirements. This problem should be considered for all relevant types of nudging, especially when developing informational nudges. This can be the case for other public organizations as well, as the consequences related to, for example, conscious or unconscious tax fraud is well known. Other organizations should therefore also assess if they are nudging based on fear. However, this is only speculative, as not enough data is acquired in this study to state that this is a problem for other public organizations in Norway.

6.2.2 Libertarian Paternalism

Libertarian paternalism, that is, freedom of choice and nudging towards the recipient's welfare, is relevant for the public sector in the context of digital nudging. This is because it matches several of the considerations the public sector needs to make. Also, one could say that it is not beneficial nudging if it is not in compliance with libertarian paternalism (Thaler & Sunstein 2003). Hence, it is important to explore what types of digital nudging are in line with this concept.

Simplifying digital systems could include making the system straight to the point and simple to navigate through, for example, by using mapping. This could, preferably, be implemented as the path that leads the user to provide necessary information rapidly and correctly. An informant suggested designing solutions as a tunnel, further explained as one uncomplicated way through the system, with no possible exits that confuse the user. In some areas, they do not want or need the user to think, just do. With few possible detours, it might be easier for the users to understand what they need to do. If simplifying the system and nudge for efficiency is to prevent the users from thinking, it could be questioned whether this is libertarian paternalism.

There is no consensus regarding whether nudging is in line with libertarian paternalism (Quigley 2013). Suppose the nudges intend to simplify and prevent the user from thinking. In that case, it could still be libertarian paternalism as long as the direction is towards the promotion of their welfare and they still have the freedom to make other choices. It could additionally be argued that it is a good nudge if the goal of the nudge comes from good intentions (Clavien 2018). Although the simplification suggested in the interview had the primary motivation of easing the load on the user, it might have other consequences. Sela (2019) points out that high usability might hinder a user in making informed and deliberate decisions. Increasing efficiency by creating a better flow in the application forms by simplifying the systems could therefore work against libertarian paternalism. It would be difficult to argue that libertarian paternalism is upheld if the system is simplified by reducing the number of options and available information because it might reduce the perceived freedom of choice.

These findings are of importance for objective 2. Nudging to achieve usability and simplification of processes could contradict libertarian paternalism and hence the values of the public sector in Norway. This means that it is essential always to include the possibility to avoid the nudge.

6.2.3 User Groups and Situations

As pointed out, the correct time to nudge, *kairos*, will be different depending on the users and their situation. Therefore this is something that has to be evaluated for each situation separately. Common for all situations is that this should be after the completion of the primary tasks. Amongst the informants, there was agreement that everyone can be nudged. However, adaptations have to be made related to the recipient and the situation. Users of *Illness in the Family* were brought up to illustrate the differences between the users and employers. It was stated that nudging users in demanding life situations can be viewed as unethical, as they can be vulnerable. However, these users might suffer even more from reduced cognitive capacity and biases. Hence, it is argued that these users might need even more assistance to make good decisions. As the results show, the employers that use NAV's solutions have expressed a wish for NAV to adapt to their needs and situation. This was also considered relevant for *Illness in the Family*. Considering the different user situations, it might be possible that the different user groups should receive different types of nudges at different times. Hence, user insight needs to be a part of creating nudges. As design,

technology, and communication are important factors when developing nudges, it could be an interdisciplinary task. In addition, as NAV is a public organization, it also has to include legal considerations.

6.2.4 Personalized Nudging

Several informants stated that personalized nudging has potential in the public sector. This is supported by several studies that show that personalized nudges can be most effective (Yeung 2017, Mirsch et al. 2017). As mentioned, there are several factors to consider in relation to personalized nudging. One of these is the continuation of discrimination or bias present in the minds of the choice architects. Based on this, it is suggested to use universal nudges. In contradiction, other results indicate that there might not be one answer to the question of how to nudge, as the population in Norway is diverse. From this, there are two options: adapt the nudges to fit the different user groups or provide the same nudges to prevent possible discrimination.

Providing personalized nudges could make it easier to nudge users despite language differences or disability. This is referred to as *justice* by Renaud & Zimmermann (2018) - everyone should reap the benefits of the results of the nudge. This could be a very important ethical aspect depending on if the nudges are possible to have universally designed or not. Also, as Thaler & Sunstein (2003) argue, the nudge should be judged beneficial by the nudgee themselves. As individuals will have different opinions of this, it might be difficult to achieve this with universal nudging. This means that for a large organization such as NAV with diverse users, it might be easier to achieve justice and beneficial outcomes as judged by the users themselves with personalized nudging. From this follows that both of the approaches of personalizing a nudge as stated by Mills (2020) are relevant for the public sector, i.e., choice personalization and personalizing the delivery method of the nudge. The first most relevant to ensure libertarian paternalism, and the latter to ensure justice.

As mentioned by an informant, *justice* should not be an issue if there is universal design, which is required by law in Norway. However, one could argue that the requirements for universal design (i.e., making the digital solutions available for as many people as possible) might not include nudging. This is because they might be able to use the platform although not receiving the nudges. For example, a sight-impaired user might not benefit from the nudges implemented by visual elements, but may be able to use the platform either way. Therefore it was suggested that one needs to design different nudges so that all users can receive them, regardless of disabilities. This means that the delivery method of these nudges should be personalized if universal design is not possible.

With a personalized nudge, it could be easier to create a nudge that complies with libertarian paternalism in relation to promoting welfare for the individual. Despite this, if the personalized nudge is designed based on incorrect assumptions about the nudgee, one could argue that the nudge does not direct towards the promotion of the nudgee's welfare. Even so, universal nudges could be more likely not to follow libertarian paternalism. When a large group receives the same type of nudge, it would be difficult to nudge everyone in a direction that will promote their individual welfare. Hence, utilizing personalized nudging might make it easier to comply with libertarian paternalism.

As results show, the users expect that NAV will offer personalized services and nudges. Additionally, NAV states that it is possible to take inspiration from Netflix (NAV 2021). It might be possible that Netflix is utilizing dark patterns to provide users with personalized content. If the public sector takes inspiration from Netflix, it can be challenging to separate what is done to personalize the content and what is done to increase the profit (Gray et al. 2018). As dark patterns hide and deceive (Waldman 2020), this can be in conflict with transparency and the trust-based relationship. It was also stated that the goal for NAV is not to become Foodora.

Assessing the effects of digital nudges is another thing that requires a broad data foundation. Here, a problem related to the collection itself arises. Collection of data is essential, but how much should be collected? Gregor & Lee-Archer (2016) suggests to use data mining and predictive analytics to improve the nudges iteratively. This can be beneficial to evaluate if the nudge is nudging the

users in the correct direction. However, there are not many critical studies related to using data to optimize nudges. As the public sector needs to take care of the mentioned additional values, a more critical perspective could be important. However, this is more relevant for future work.

As personalized nudges can be very effective, it might be more difficult for the individual to identify the nudge. Thereby, transparency could be of great importance in this context. Further, it is arguably more challenging to preserve freedom of choice if the nudges become very effective.

6.2.5 Transparency

It is important to make it easy to avoid the nudge to preserve freedom of choice (Lembcke et al. 2019). This statement complies with questions raised in the interviews relating to how nudging could be transparent, as one could argue that transparency about behavioral changes is crucial in the public sector. This could have severe practical implications, especially concerning priming and framing. The only way the recipient can avoid informational nudges is to not read or receive the information. On several occasions, the public sector needs to give people information of importance. What will happen if one makes it possible to not receive this nudging? Moreover, could it be possible to avoid all nudging, as all communication and design will nudge?

Transparency can be of great importance to avoid problems similar to the ones related to explainable AI, as explained in section 5.8. The public sector should ensure *explainable nudging*, which in this thesis is described as nudges where the reason for the nudge and expected outcome is transparent, explainable, and based on known foundations. It is not acceptable if the public sector in Norway nudges in specific directions based on unclear foundations.

It is argued that laws and so forth are more transparent than digital nudging, as people are aware of the laws that control their behavior. Also, if nudges are not transparent, it does not necessarily indicate freedom of choice (Quigley 2013). Following this logic, *no* design follows the freedom of choice if the design decisions are not transparent, as all design will affect the user (Weinmann et al. 2016a). It will be challenging to accomplish this in practice, as it would be too much information for the user. A more realistic approach would be to assess the need for transparency on intentional nudging.

6.2.6 The Definition of a Good Choice

Based on the results, there seems to be four general (possibly overlapping) options when deciding if a direction is beneficial to nudge the recipient towards:

- Empirical evidence
- A strategy
- Perspective of the user (pro-self nudges or selfish goals)
- Perspective of the public (pro-social nudges)

Other factors that could be of relevance are long-term perspectives, the bigger picture, and total utility.

Which of these strategies should be prioritized is not established, and in several cases, they might be contradicting. Sunstein (2014) states that the nudge should always benefit the nudgee as judged by the nudgee, which suggests that pro-self or selfish goals are the way to go. Clavien (2018) brings four arguments that can classify a nudge as a good nudge. Pro-social and pro-self nudges can be justified with four different (possibly overlapping) arguments: (1) the nudge can have a desirable consequence for the nudgee, (2) the nudge contributes to fulfill important values or principles, (3) the goal comes from a good intention, (4) there exist evidence that the nudgees share the same goals as the choice architects (preferably empirical evidence). All these arguments, except for number 4, can be challenging to use in practice, as creating nudges following these would be

influenced by subjective opinions. It might seem like using empirical evidence is the most objective approach, although this can also be affected by prejudice. In addition, empirical evidence alone is not enough, as its purpose will be to substantiate one of the other options. Strategies can be based on political grounds and can not always be substantiated with empirical evidence. Nevertheless, this discussion enters the field of public value and political discussions and exceeds the scope of this thesis.

The decision of which direction one should nudge the user needs to be defined based on something, but it is complicated to determine what this something should be when designing systems for all citizens of Norway. Furthermore, there will always be a certain contradiction concerning whether one should focus on pro-self or pro-social nudges if they are not in compliance. As indicated, the public sector is here for the citizens. Hence, one thought is that pro-self nudges stand stronger than pro-social nudges.

Problems related to pro-self vs. selfish goals are essential to address. For example, a pro-self nudge that benefits the user, such as better lifestyle choices based on empirical evidence, is not necessarily what the user prefers. This is because people do not always act in their best interest, which an informant also pointed out. Further, the people of Norway have a trust-based relationship with the public sector and arguably expect that the public sector is concerned with the people's best interests. Thereby, one could claim that if the public sector uses selfish goals not proven to be beneficial as a foundation for the direction they nudge, they might lose credibility and trust. This is because selfish goals, as explained, are not always in compliance with pro-self, that is, the best interest of the individual. Further, pro-self options are more likely to be based on empirical evidence that can validate that the nudge is beneficial for the user. In addition, it is unrealistic to assume that public organizations can have control over all the citizens' personal preferences. However, it should be mentioned that pro-self can also overlap with selfish goals, depending on bias and related factors. A general goal should be to create nudges that comply with both pro-self and selfish goals.

As the results show, a nudge may be justified if the total utility is greater than the efforts of the individual receiving the nudge. In addition, it can be argued that pro-social nudges are also pro-self nudges in many cases. This can be, for example, nudges with the aim of reducing global warming. This implies that pro-social and pro-self nudges can overlap and that pro-self, compared to selfish goals, is more often in compliance with pro-social. Further, another finding was that the public sector should have long-term perspectives in mind. This can with highest certainty be achieved with pro-self or pro-social, unlike selfish goals that are more likely to be short-term and affected by bias, procrastination, or stress.

Amongst the different guidelines and definitions of nudging and digital nudging, the one repeating factor is that the benefit for the nudgee is important. This is also the case for the results obtained in this study. This also preserves that the direction should not be something political. In relation to maintaining the trust-based relationship with the public, it should also be mentioned that studies show that amongst the public the acceptance levels for pro-self nudges are higher than pro-social (Hagman et al. 2015). Thereby, it is suggested that the pro-self option, substantiated with empirical evidence, should be prioritized by the public sector.

6.2.7 A good choice vs a conscious choice

One could focus on how a user can make a *conscious* decision with nudging, instead of having to decide whether pro-social or pro-self is most important. The focus can thereby be on providing the user with information so that they make a conscious decision, as it is showed that informational nudges could result in more informed decisions (Damgaard & Nielsen 2018). Still, the choice architect has to decide what information to include, which will affect the user's decision. Creating nudges that aim for a conscious choice will also affect the decision the user makes. Therefore it is challenging to separate between this and nudging the actual decision. Even though a decision is conscious, it is not necessarily beneficial. Nevertheless, as stated, employees of the public sector are bureaucrats, and they are afraid to tell people to do one thing over the other. Hence, focusing on a conscious decision to the degree that this is possible might be the more realistic option after

all. Nudging towards a conscious decision might not require the same focus on transparency, as it is already somewhat transparent through the information.

6.3 Summary of Discussion

A summary of the discussion points and conclusions are presented in Table 22.

Table 22: Summary of discussion

RQ	Area of discussion	Main Points and Conclusion
1	Awareness	<p>Main points:</p> <ul style="list-style-type: none"> • Several identified digital nudges contradict with the goals of NAV and <i>Illness in the Family</i>. • The choice architects are aware of the possibilities of affecting the users through design. • There may not be the same level of awareness concerning that <i>all</i> design will affect the user. <p>Conclusion: There might be unclarities regarding the concept of nudging and digital nudging and it is used unintentionally.</p>
1	Utilization	<p>Main points:</p> <ul style="list-style-type: none"> • The analysis of digital artifacts shows that there is unconscious digital nudging present on NAV's online solutions. <p>Conclusion: There seems to be a correlation between the level of awareness and utilization of digital nudging.</p>
2	Informational nudging	<p>Main points:</p> <ul style="list-style-type: none"> • Informational nudging may be the least intrusive way of nudging the citizens. • Users of NAV are nudged with complicated information. • There is potential for informational nudging for NAV. <p>Conclusion: For NAV and the public sector, the biggest potential for digital nudging is to rephrase information to make it more understandable.</p>
2	Libertarian paternalism	<p>Main points:</p> <ul style="list-style-type: none"> • Simplifying systems so that users do not have to think might not comply with libertarian paternalism. • High usability can hinder the user in making informed decisions. <p>Conclusion: Nudging to achieve usability and simplification of processes could be in contradiction to libertarian paternalism. It is essential to include the possibility to avoid the nudge.</p>

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Table 22 – continued from previous page

RQ	Area of discussion	Main Points and Conclusion
2	User groups and situations	<p>Main points:</p> <ul style="list-style-type: none"> • Everyone can be nudged, but the nudge has to be adapted to the users situation. • User insight needs to be included in the process of creating digital nudges. <p>Conclusion: Developing nudges for all user groups in NAV is an interdisciplinary task and each case needs to be considered separately.</p>
2	Personalized nudging	<p>Main points:</p> <ul style="list-style-type: none"> • Personalized nudging might facilitate the continuation of intentional or unintentional discrimination based on the choice architects' biases and prejudices. • Personalized nudges can be less discriminatory as they are adapted to the recipient. • Personalized nudges are more likely to nudge in the most beneficial direction as judged by the nudgee themselves compared to universal nudges. • Personalized nudges can more easily fit with libertarian paternalism. <p>Conclusion: Personalized nudges can make it easier to preserve the trust based relationship between government and citizens.</p>
2	Transparency	<p>Main points:</p> <ul style="list-style-type: none"> • It is important to have transparency and explainability to avoid digital nudging that is based on unclear and untraceable foundations. • Transparency and explainability of intentional nudges is more realistic, as it will be challenging to ensure this for unconscious and unintentional nudging. <p>Conclusion: It is important that digital nudges are transparent and explainable.</p>

continued on the next page

Table 22 – continued from previous page

RQ	Area of discussion	Main Points and Conclusion
2	The definition of a good choice	<p>Main points:</p> <ul style="list-style-type: none"> • There are identified four main options of how to decide what direction to nudge the recipient towards: empirical evidence, a strategy, perspective of the user (pro-self or selfish goals) and perspective of the public (pro-social). • There could be contradictions between the different options. In these cases, it is possible to consider the total utility. • Pro-self might preserve the trust-based relationship better compared to other options. <p>Conclusion: The planned outcome of the nudge should be decided based on pro-self grounds and a strategy substantiated with empirical evidence if possible.</p>
2	A good choice vs. a conscious choice	<p>Main points:</p> <ul style="list-style-type: none"> • Focusing on a conscious and informed decision will still require the choice architect to decide what information to include, and this will still affect the choice of the user. <p>Conclusion: there is not a clear line between a good choice and a conscious choice.</p>

6.4 Implications of Research

The research contributes to fill the gap of research related to digital nudging in the public sector in Norway. There is little research about this context at this time, and the results from this thesis can also be used as a foundation for further research within the area. It is also possible that the findings could be relevant for public sectors in other countries for, for example, comparative studies.

Addressing digital nudging in public organizations through interviews and conversations with representatives will likely lead to greater awareness and possibly an expanded technical vocabulary for the participants. This means that the research had educational value for the participants. Further, the changes performed on NAV's digital solutions that comply with the findings in the analysis of digital artifacts presented during the research suggest that the research also had catalytic value. The research can also ease the process of further increasing the level of awareness as specific areas of focus are suggested.

Addressing the concept of digital nudging in public organizations will in itself lead to a greater level of awareness. Changes have been made in NAV's digital solutions that comply with the findings of this research. This brings credibility to the statement of increased awareness. The results can also ease the process of further increasing the level of awareness as specific areas of focus are suggested.

Reaching objective 2, which is creating guidelines adapted for the public sector, is expected to ease implementation and increase awareness of digital nudging in this sector. This is supported by the correlation between the level of awareness and utilization of digital nudging. The guidelines also address the technological determinism often relevant by providing principles and a checklist that focuses on society's needs.

6.5 Validity of Findings

Several metrics were used to evaluate the validity of findings, that is, how accurately the research produces results that correspond to real properties, characteristics, and variations in the real world. The metrics were chosen based on relevance for the type of work conducted. These are construct, content, external and criterion validity.

Objective 1 was to understand and increase the level of awareness of digital nudging in the public sector. Awareness is a construct that cannot be directly observed. Hence, the measurement had to happen by observing or measuring associated factors. This was achieved mainly by conducting interviews and analysis of digital artifacts. It was found that the analysis of digital artifacts helped understand the level of awareness related to digital nudging, as unintentional use correlated with low awareness. One could argue that some of the questions asked in the interviews were not directly relevant to the construct at hand. Despite this, it is evaluated that the construct validity is high, as the interviews were exploratory and had the additional intentions of highlighting areas not previously considered by the researchers. In general, it was found that the measurement methods do, in fact, measure and analyze the constructs intended.

The analysis of digital artifacts was intended to identify digital nudges and indirectly collect data about the level of awareness. As mentioned in section 6.1, one interview revealed that one of the nudges assumed to be unintentional was based on knowledge and intentionally implemented. This could mean that the analysis of digital artifacts did not measure the construct intended and, hence, affects the construct validity. However, as most of the other identified digital nudges were contradictory to NAV's goals, it is assumed that this is not the case for the majority of these findings.

Data was collected from different sources. The data were assumed to cover several important and relevant parts of the subject at hand. Other parts could also have significance for the results. This could be questions overlooked in the interviews that could lead to some aspects not being explored. As the questions asked were adapted to the interviewees' backgrounds and work experiences by the interview conductors' opinions, it is possible that this is the case. Further, the collection and use of documents could possibly have been improved. If relevant documents were not identified and analyzed, this could have influenced the result. Despite this, the content validity is considered to be high, as the most relevant parts (the interviewees' opinions of awareness, digital artifacts, and documents) for the objectives were used during the study.

The case study was performed to collect data from a representative of the public sector in Norway. As the objectives were centered around the public sector in general, the findings had to be generalized. It was essential to choose somewhat representative participants for the population by profession to ensure generalizable results. This means that as it was expected that it would be mainly designers that would work with implementing digital nudging in general, it was decided to interview people with this or related professions in the case study.

However, several factors that could affect the external validity were identified. Sampling bias could be present, as all interviewees from NAV were women. It is possible that this is not the case in the general public sector. This could also be the situation for other factors like area of residency and size of work place. It was also explained that *Illness in the Family* was one of the most advanced departments within NAV in relation to digitalization and information composition. It is not clear if *Illness in the Family* reflects the situation for the rest of the public sector, but as data were also collected from outside of *Illness in the Family* and NAV, it is not expected that this will significantly affect the external validity. Another relevant influencing factor can be that one of the constructs in question, awareness, most likely increased for the interviewees from participating in this study. However, as little and relatively general information was provided to the interviewees prior to the interviews, it is assumed that this factor did not significantly influence external validity.

The criterion validity of the results is considered as low, as there exists little relevant research that can compare, confirm or dispute the findings in this thesis.

The answering of the research questions were affected by the reliability and validity of the findings and analysis of the data. None of the factors influencing the validity are considered to be critical,

and the reliability is assessed to be sufficient. Hence, it is argued that the answers to the research questions are valid.

7 Conclusion

The following chapter presents the conclusions deduced from the work, in addition to the guidelines. Finally, suggestions for future work are presented.

7.1 Conclusion of Work and Achievement of Aim and Objectives

The aim of this thesis was to understand and increase the level of awareness regarding digital nudging and how it can best be used in the public sector in Norway. Two objectives were established based on the aim. These were to (1) analyze the level of awareness related to digital nudging in the public sector and (2) contribute with adapted guidelines that can be applied when implementing digital nudging.

It is concluded that the level of awareness in connection to unconscious and unintentional nudging in the public sector in Norway is low. The level of awareness of conscious and intentional nudging is somewhat higher. The use of digital nudging reflects this, as there are some design choices made based on the knowledge of persuasive design. However, a large part of the digital nudging present is arguably unconsciously implemented which means that the overall awareness is low.

Further, the types of digital nudging that are most in line with the values of the public sector in Norway at this time are concluded to be pro-self personalized informational nudging. This is argued to fit with the needs and factors that the public sector must consider, such as making solutions for a diverse user group and not nudging in ways that can affect the trust-based relationship with the population.

Both objectives are considered to be achieved as the case study analyzed the level of awareness of digital nudging and guidelines were developed. Additionally, the research in it self is believed to have increased the level of awareness of digital nudging for the involved parties. Hence, the aim is to a large extent reached. This is substantiated by the fact that several of the identified nudges in the digital artifacts were updated for the better during the work with NAV.

Although the aim is considered to be reached, this evaluation is performed based on the scope and objectives defined for this thesis only. However, increasing the level of awareness and understanding digital nudging in the public sector should be a continuous project. This thesis is believed to initiate further research concerning digital nudging in the public sector.

7.2 Guidelines

Before presenting the guidelines, it is important to emphasize that they are not intended to work as a quick fix for better implementation of digital nudging. The developed guidelines are designed to be used in situations where the level of awareness is already substantial, even though the guidelines themselves are also expected to increase the level of awareness. Thereby the first step should be to increase the understanding of the concept of digital nudging.

The guidelines consist of a set of general principles and a checklist, and were developed as illustrated and described in Figure 2 and section 3.4. The principles were generalized for diverse use in the public sector. This means that findings related to the types of digital nudging that are most relevant for the public sector are not the primary focus. The general principles suggested are presented in Table 23.

Table 23: General principles, design of digital nudges

General Principles

- The nudge should not harm the citizen.
 - The direction of the nudge should be based on empirical evidence and user insight, where possible.
 - The nudge should be designed in a way that makes it available for as many people as possible.
 - The nudge should not affect the outcomes of the interaction with the public sector.
 - The citizen should have the option to avoid the nudge.
 - The nudge should be transparent and explainable.
-

The checklist is presented in Table 24. Several elements are related to the main principles to ensure that they are covered.

Table 24: Checklist, design of digital nudges

Checklist

- The nudge can be justified by empirical or scientific evidence or is in line with strategies.
 - User insight has been conducted to decide when and how to implement the nudge.
 - The nudge benefits the user or results in positive total utility.
 - The nudge is available for all users, despite, for example, disabilities or language differences.
 - The nudge is not discriminatory.
 - The personalized nudges does not use more personal data than required to obtain the desired result.
 - All options are still available for the user.
 - The reason behind the nudge and expected outcome is known and clear for the citizens.
 - The possible consequences of the nudge have been identified and documented.
-

Figure 15 illustrates how the principles and checklist can be used in practice. The general principles should be used to design the nudge, and the checklist is to ensure that these principles have been

taken into account during the design process. If the nudge passes the checklist, it could be ready for implementation. As illustrated, the process can be repeated several times until the desired results are obtained.

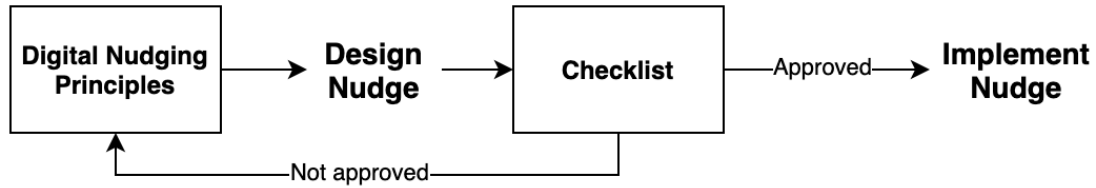


Figure 15: Process overview for practical use of guidelines and checklist

7.3 Future Work

There were identified three main areas with potential for future work. These are (1) comparative studies with other public organizations, (2) creating guidelines adapted for different roles and disciplines, and (3) creating guidelines or a model for analyzing and monitoring the effects of the digital nudge after implementation.

As this study focused on NAV as a representative for the public sector in Norway, it could be helpful to conduct studies focusing on other organizations. Despite the fact that several of the findings can be generalized, it is difficult to guarantee that this is representative. This means that conducting comparative studies could help fill the knowledge gap, in addition to increase the criterion validity of similar studies. If new studies dispute the findings in this thesis, another option for future work will be to improve the guidelines.

It was found that developing digital nudges in the public sector in Norway is interdisciplinary work. Thereby, it is considered valuable to have guidelines adapted for the different roles and disciplines to ease the process. Examples of different disciplines are design, copywriting, psychology and law.

The scope of this thesis does not include monitoring and measuring the effects of the digital nudge after it is implemented. This is arguably an important part of optimizing the implementation of digital nudging, in addition to identifying undesired consequences. It could also facilitate an iterative approach towards implementing digital nudging. Existing studies exploring this does not consider the values and considerations of the public sector.

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Appendix

A Translations

English	Norwegian
Illness in the family	Sykdom i familien
17 pain points	17 smertepunkter
Management by objectives and results	Mål- og resultatstyring
Objective and result indicators	Mål- og resultatindikatorer
Attendance allowance in connection with a child's illness	Pleiepenger for sykt barn
Care benefit	Omsorgspenger
Training allowance	Opplæringspenger
Attendance allowance for people over 18 years old	Pleiepenger for personer over 18 år
Attendance allowance when caring for a person in their last living days	Pleiepenger i livets slutfase
Basic benefits and assistance benefits	Grunn- og hjelpestønad
Klage og omgjøring i NAV - hva kan gjøres bedre?	Complaints and Conversion in NAV - What can be done better?
Likestillings- og diskrimineringsloven	Equality and Anti-Discrimination Act

B Strategies and Design Patterns suggested by the European Union Agency for Network and Information Security

- Strategy 1: Minimise. States that the amount of data collected should be minimised. Common design patterns are "select before collect", anonymisation and pseudonyms.
- Strategy 2: Hide. States that any personal data, and their interrelationships, should be hidden from plain view. Common design patterns are encryption, hide traffic patterns, anonymisation and the use of pseudonyms.
- Strategy 3: Separate. States that personal data should be processed in a distributed fashion, in separate compartments whenever possible. This will make it more difficult to create complete profiles of one person. No specific design patterns for this strategy is known.
- Strategy 4: Aggregate. States that personal data should be processed at the highest level of aggregation and with the least possible detail in which it is still useful. Common design patterns are aggregation over time, dynamic location granularity for location based services and different anonymisation techniques.
- Strategy 5: Inform. States that data subjects should be adequately informed whenever personal data is processed, and corresponds to the important notion of transparency. Possible design patterns are data breach notifications and platform for privacy preferences.
- Strategy 6: Control. States that the data subjects should be provided agency over the processing of their personal data. This strategy is an important counterpart to the inform strategy - one has to be able to use the information about the data collection to make informed choices. Common design patterns are user centric identity management and end-to-end encryption support control.
- Strategy 7: Enforce. States that a privacy policy compatible with legal requirements should be in place and should be reinforced. This strategy ensures that a privacy policy is in place. Common design patterns are access control, sticky policies and privacy rights management.
- Strategy 8: Demonstrate. Requires a data controller to be able to demonstrate compliance with the privacy policy and any applicable legal requirements. Common design patterns are privacy management systems and the use of logging and auditing.

C Rules for Artificial Intelligence provided by the EU

- "Adequate risk assessment and mitigation systems"
- "High quality of the datasets feeding the system to minimise risks and discriminatory outcomes"
- "Logging of activity to ensure traceability of results"
- "Detailed documentation providing all information necessary on the system and its purpose for authorities to assess its compliance"
- "Clear and adequate information to the user"
- "Appropriate human oversight measures to minimise risk"
- "High level of robustness, security and accuracy"

Spørsmål med forskningsspørsmål og tema rettet mot **offentlig sektor**

Forskningsspørsmål	Tema	Retningslinjer
Hvordan bruker den offentlige sektoren i Norge persuasive computing og/eller digital nudging?	Generelt	Her vil vi stille spørsmål for å få innsikt i erfaringen ansatte i offentlig sektor har med digital nudging og persuasive computing og hvordan/hvor de bruker dette.
	Interne rutiner og kunnskap	Her vil vi be om innsikt i eventuelle roller og rutiner relatert til nudging er, samt hvordan kunnskap og bevissthet rundt nudging er. I tillegg til å finne ut om det brukes tilpasset nudging i systemene deres og finne ut hvordan effekten av nudging eventuelt måles.
	Nudgingteknikker	Her ønsker vi innsikt i hvilke nudgingteknikker som brukes i offentlig sektor og effekten av de ulike teknikkene.
Hvilke strategiske valg underligger bruk av digital nudging i offentlig sektor?	Bevissthet i offentlig sektor i Norge	Her vil vi fokusere spørsmålene rundt motivasjonen bak bruken av nudging, og hvordan ansatte i offentlig sektor har inntrykk av at nudging blir brukt hos andre offentlig organer.
Hvilke lover og regulering eksisterer for digital nudging i offentlig sektor?	Retningslinjer for nudging	Her stiller vi spørsmål som omhandler retningslinjer og rutiner mtp digital nudging
Hvilke rutiner, lover og reguleringer som omhandler innsamling av persondata eksisterer i offentlig sektor?	Innsamling og deling av data i nudging-sammenheng	Her stiller vi spørsmål som omhandler retningslinjer og rutiner mtp datainnsamling i nudgingsammenheng

I hvor stor grad er folk flest bevisst på hvordan offentlig sektor nudger/kan nudge dem?	Bevissthet for bruker	Her stiller vi spørsmål om hvordan de i offentlig sektor tenker at bevisstheten for en typisk bruker (innbygger) er rundt nudging
Meninger	Meninger	Her skal vi stille spørsmål som omhandler mer personlige erfaringer rundt nudging, dvs utforming, bruk osv.
Hvordan er forskjellene på digital nudging på kommunalt og statlig nivå?	Kommunalt vs statlig i praksis	Her stiller vi spørsmål som omhandler nudging på forskjellige nivåer i offentlig sektor i Norge

CASE STUDY

Tema	Retningslinjer
Generelt	Her skal vi undersøke om det er noen spesielle case studier som kan være aktuelle mtp offentlig sektor og digital nudging
Økonomiske fordeler	Her skal vi stille spørsmål om hvordan nudging kan brukes spesifikt for økonomiske besparelser i offentlig sektor.
(Korona)	Her skal vi stille spørsmål som omhandler hvordan nudging kan brukes i situasjoner som omhandler korona.
Internt	Her skal vi stille spørsmål som omhandler hvordan nudging kan brukes i interne systemer i offentlig sektor for effektivisering

Vil du delta i forskningsprosjektet

Bruk av digital nudging i offentlig sektor i Norge

Dette er et spørsmål til deg om å delta i et forskningsprosjekt hvor formålet er å undersøke hvordan digital nudging blir brukt i offentlig sektor. I dette skrivet gir vi deg informasjon om målene for prosjektet og hva deltakelse vil innebære for deg.

Formål

Masteroppgaven har som formål å undersøke hvordan digital nudging blir brukt i offentlig sektor i Norge. Dette inkluderer å kartlegge eventuelle retningslinjer brukt, bevissthet rundt området fra offentlig perspektiv, undersøke hvilke veier digital nudging kan ta i framtiden med tanke på personaliserte nudger og relaterte spørsmål.

Datagrunnlaget i forskningen er kvalitativ og blir samlet inn gjennom å intervju representanter fra offentlig sektor i Norge. Flere personer vil bli intervjuet.

Hvem er ansvarlig for forskningsprosjektet?

Prosjektansvarlig er Babak A. Farshchian, Førsteamanuensis ved NTNU, Fakultet for informasjonsteknologi og elektroteknikk, Institutt for datateknologi og informatikk.

Hvorfor får du spørsmål om å delta?

For å finne intervjuobjekter som har kunnskap og erfaring om digital nudging i offentlig sektor, har vi på forespørsel til [bedrift/veileder] fått oppgitt at du har erfaring og kunnskap på dette området, og derfor fått din kontaktinformasjon.

Hva innebærer det for deg å delta?

Hvis du velger å delta i prosjektet, innebærer det et intervju der vi vil stille åpne spørsmål om ulike temaer innen hvordan din bedrift bruker digital nudging. Temaene som kan være i hovedfokus er nudging generelt, interne rutiner og kunnskap rundt hvordan det blir brukt, ulike teknikker som brukes, bevissthet rundt digital nudging i offentlig sektor, retningslinjer for digital nudging, innsamling av data, dark patterns, deling av data, universell og tilpasset nudging, bevissthet for brukeren rundt nudging, og avslutningsvis litt om tanker du har rundt temaene.

Det settes av ca 1 time til intervjuet. Vi vil ta bilde- og lydopptak av intervjuet, i tillegg til digitale notater underveis, for å bedre kunne analysere informasjonen i ettertid.

Det er frivillig å delta

Det er frivillig å delta i prosjektet. Hvis du velger å delta, kan du når som helst trekke samtykket tilbake uten å oppgi noen grunn. Alle dine personopplysninger vil da bli slettet. Det vil ikke ha noen negative konsekvenser for deg hvis du ikke vil delta eller senere velger å trekke deg.

For å trekke samtykket ditt kan du kontakte en av de ansvarlige for studiet.

Ditt personvern – hvordan vi oppbevarer og bruker dine opplysninger

Vi vil bare bruke opplysningene om deg til formålene vi har fortalt om i dette skrevet. Vi behandler opplysningene konfidensielt og i samsvar med personvernregelverket.

Personene som vil ha tilgang til innsamlet data vil være Babak A. Farshchian (veileder), Ingrid Asklund Larssen og Heidi Lohne Brække (studenter). Innsamlet data vil bli lagret i Nice, NTNU sin lagringsplass for sensitive data, hvor alle parter med tilgang har tofaktorautentisering for innlogging. Her vil notater fra intervju, transkribert versjon av intervju og eventuelle lydfiler bli lagret. Dataen blir også kryptert.

Publikasjon vil kun inneholde gjengivelser fra innhold i intervjuer, hvilken bedrift intervjuobjektet jobber i, og eventuelt hvilken stilling intervjuobjektet innehar. For de som har kjennskap til case studiet vil det til en viss grad være mulig å identifisere personer basert på for eksempel sitater.

Hva skjer med opplysningene dine når vi avslutter forskningsprosjektet?

Opplysningene anonymiseres, til den grad det er mulig, når prosjektet avsluttes/oppgaven er godkjent (01.06.2021). Dataen vil beholdes litt etter prosjektet avsluttes, på grunn av eventuell publisering av arbeidet. Det vil ikke bli lagret lenger enn til 31.12.2021.

Dine rettigheter

Så lenge du kan identifiseres i datamaterialet, har du rett til:

- innsyn i hvilke personopplysninger som er registrert om deg, og å få utlevert en kopi av opplysningene, kopi av bilde- og lydopptak og notater fra intervjuet.
- å få rettet personopplysninger om deg
- å få slettet personopplysninger om deg
- å sende klage til Datatilsynet om behandlingen av dine personopplysninger.

Hva gir oss rett til å behandle personopplysninger om deg?

Vi behandler opplysninger om deg basert på ditt samtykke.

På oppdrag fra NTNU, Fakultet for informasjonsteknologi og elektroteknikk, Institutt for datateknologi og informatikk har NSD – Norsk senter for forskningsdata AS vurdert at

behandlingen av personopplysninger i dette prosjektet er i samsvar med personvernregelverket.

Hvor kan jeg finne ut mer?

Hvis du har spørsmål til studien, eller ønsker å benytte deg av dine rettigheter, ta kontakt med:

- Babak A. Farshchian, [REDACTED] Førsteamanuensis ved NTNU, Fakultet for informasjonsteknologi og elektroteknikk, Institutt for datateknologi og informatikk.
- Ingrid Asklund Larssen, [REDACTED] student ved NTNU, Fakultet for informasjonsteknologi og elektroteknikk, Institutt for datateknologi og informatikk
- Heidi Lohne Brække, [REDACTED] student ved NTNU, Fakultet for informasjonsteknologi og elektroteknikk, Institutt for datateknologi og informatikk
- Thomas Helgesen, [REDACTED] Personvernombud ved NTNU, Direktør Organisasjon.

Hvis du har spørsmål knyttet til NSD sin vurdering av prosjektet, kan du ta kontakt med:

- NSD – Norsk senter for forskningsdata AS på epost (personverntjenester@nsd.no) eller på telefon: 55 58 21 17.

Med vennlig hilsen

Ingrid Asklund Larssen
(Student/forsker)

Heidi Lohne Brække
(Student/forsker)

Samtykkeerklæring

Jeg har mottatt og forstått informasjon om prosjektet *Bruk av digital nudging i offentlig sektor i Norge*, og har fått anledning til å stille spørsmål.

Jeg samtykker til:

- å delta i intervjuet
- at det blir tatt bilde- og lydopptak av intervjuet
- at mine opplysninger behandles frem til prosjektet er avsluttet

(Signert av prosjektdeltaker, dato)

Digital nudging i offentlig sektor

Digital nudging blir bevisst anvendt på digitale plattformer, både offentlig og privat, i flere og flere land. Norge, som en av de fremste innen bruk av ny teknologi i offentlig sektor (Kommunal- og moderniseringsdepartementet, 2019), bør være med på denne utviklingen og øke fokuset rundt bruk av digital nudging i offentlig sektor.

NAV når mange av sine brukere gjennom digitale plattformer. Med økt fokus på digitalisering av tjenester er det viktig og sette seg inn i hvordan digitale løsninger kan utformes på best mulig måte. Digital nudging kan øke effektiviseringen og flyten i digitale prosesser, hvilket er til fordel for både brukere og saksbehandlere.

Nudging er til stede i alle valgsituasjoner og under de fleste fremvisninger av informasjon. Dermed er det også mulig å nudge brukere i uønskede retninger om man ikke er bevisst på utformingen av nudgene. For å kunne dra nytte av digital nudging i offentlig sektor er det viktig med gode retningslinjer og bevissthet rundt effekten av nudging.

Vår oppgave er å utforme retningslinjer for digital nudging i offentlig sektor i Norge. Dette vil blant annet gjøres gjennom kvalitative metoder som intervju og case study som tar deler av NAV sine løsninger som utgangspunkt.

Kommunal- og moderniseringsdepartementet. Én digital offentlig sektor. Digitaliseringsstrategi for offentlig sektor 2019-2025. Strategi . 2019.

G AI in NAV: principles

This appendix includes parts of the Responsible AI in NAV document. The document in full can be found at https://navikt.github.io/ansvarlig_ai/.

Våre prinsipper

Vi viser respekt.

Vi er åpne.

Vi legger til rette for inkludering og likebehandling.

Vi er etterrettelige.

Vi tar ansvar, ovenfor brukerne våre, og ovenfor det politiske systemet vi inngår i. Å være etterrettelig betyr at vi skal kunne rettferdiggjøre *hvorfor* vi velger å bruke et AI-system til å løse et problem. Det innebærer også at vi skal begrunne valgene vi tar mens vi utvikler systemet.

- Det skal være tydelig *hvem* som er ansvarlig for AI-systemet. Denne personen har ansvar for at løsningen følger de etiske prinsippene.
- Vi dokumenterer etiske vurderinger før, underveis og etter vi utvikler. Dokumentasjonen skal være tilgjengelig.
- Vi gjennomfører alltid en personvernkonsekvensutredning, og har som mål å offentliggjøre denne. Dersom løsningen er i bruk skal vurderingen gjentas minimum hvert tredje år.
- Vi stiller krav til systemets forklarbarhet, og skal kjenne logikken bak systemene vi bygger.
- Arbeidet vårt skal bære så reproduserbart som mulig. Det betyr at datasett, kode, modeller, utfall og annen dokumentasjon er underlagt sammenhengende versjonskontroll. Et utfall skal alltid kunne spores tilbake til et gitt variabelutvalg, parameterkonfigurasjon og datasett. Løsningene skal være enkelt tilgjengelig for revisjon.

Eksempler på vårt arbeid

- Mal for PVK,
- Presentasjoner om GDPR

Vi tar sikkerhet på alvor.

Vi tar samfunnsansvar.

G.1 Translation

Our Principles

We show respect.

We are open.

We facilitate for inclusion and equal treatment.

We are accountable.

We take responsibility, for our users, and for the political system we are a part of. To be accountable mean that we should be able to justify *why* we choose to use an AI system to solve a problem. This also includes that we have to justify our decisions while developing the system.

- It should be clear *who* is responsible for the AI system. This person is responsible that the

solution follows the ethical principles.

- We document ethical assessments before, during and after we develop. The documentation should be available.
- We always conduct a privacy consequence assessment, and aim to publish this. If the solution is in use, this assessment should be repeated every three years.
- We have requirements related to the systems' explainability, and we shall know the logic behind the systems we build.
- Our work should be as reproducible as possible. This means that data sets, code, models, results and other documentation is added to cohesive version control. A result should always be possible to trace back to a given set of variables, configuration of parameters and data set. The solutions should be simple to revise.

Examples of our work

- Template for PVK
- Presentations about GDPR

We take security and safety seriously. We take social responsibility.

H 17 Pain Points for the Users of Illness in the Family

- Having a sick child
- Finding and receiving the correct information about benefit for care work
- Doctors
- Not having control over your case (saken din)
- Medical certificate: interpretation and content
- NAV's regulations
- Being away from work
- NAV does not have a holistic approach to the case
- Grading
- Retrieving information that NAV requests
- NAV's wording, logic and language
- A non-digital experience: complaints and forwarding (deferred submission)
- NAV's mindset
- Decisions
- Rejection and complaints
- Transitions between benefits
- Aftermath

I Placement of identified nudges in digital artifact analysis

The application form for training allowance has to be downloaded to your computer, printed, filled out and sent by post. This is simply because NAV is still in the process of moving the application from paper to a digital application form. Not much nudging here.

The application ("pleiepener for personer over 18 år") form is the same as "*Pleiepenger for sykt barn*", so when entering this page, you are eventually directed to the same application form. The information presented on the overview page, is also very similar.

Figure	Placement	Date
Figure 3	Attendance allowance in connection with a child's illness and case benefit	23.02.2021
Figure 9	Attendance allowance in connection with a child's illness and attendance allowance for people over 18 years	13.04.2021
Figure 8	Attendance allowance in connection with a child's illness	23.02.2021
Figure 5	Care benefit	24.02.2021
Figure 7	Attendance allowance in connection with a child's illness	13.04.2021
Figure 10	Training allowance	24.02.2021
??	Attendance allowance in connection with a child's illness and attendance allowance for people over 18 years	13.04.2021
Figure 11	Attendance allowance in connection with a child's illness, attendance allowance for people over 18 years and care benefit. For illustration purpose only the information text from attendance allowance for people over 18 years is included.	13.04.2021
Figure 4	Attendance allowance in connection with a child's illness	23.02.2021
??	Attendance allowance in connection with a child's illness	24.02.2021
Figure 13	Attendance allowance in connection with a child's illness. The figure replaced Figure 4	22.04.2021
Figure 14	Attendance allowance in connection with a child's illness	30.04.2021
Figure 6	Care benefit	30.04.2021

J Translations of Quotes


Person	English	Norwegian
B	We have a goal of saving person-years in NAV	har vi mål om å spare årsverk i nav
C	There is definitely a lot of unconscious nudging in the public sector[in Norway]	det drives nå helt klart da mye ubevisst nudging i offentlig sektor [i Norge].
C	Richard Thaler would probably say that in any form of communication, there is a form of nudging present. The presentation of a message will influence decisions.	Richard Thaler ville nok sagt, at i enhver form for kommunikasjon, så er det en form for nudging. Måten å presentere et budskap på vil styre valg.
C	to raise awareness among those who communicate, in this case the public sector, that the way things are structured have consequences.	å bevisstgjøre de som kommuniserer, nemlig, her da offentlig sektor, på at måten ting er satt opp på har konsekvenser.
D	The public sector should never think that they should become Foodora.	Offentlig sektor burde aldri tenke at de skal bli foodora.
D	NAV does not really want to receive many applications, but it is not that they do not want applications either. Because that is our mission. We are supposed to take care of the citizens, their requirements and rights.	Fordi sånn som NAV vil jo egentlig ikke at man skal få en sykt masse søknader. Men det er ikke det at vi ikke vil ha inn søknader heller, ikke sant. For det er jo det som er oppdraget vårt. Vi skal jo ivareta befolkningen og deres krav og rettigheter.
D	If NAV says 'this is smart to do', it is perceived as 'you have to do this'.	Hvis NAV sier, dette er smart å gjøre, så blir det oppfattet som dette må du gjøre.
D	Why are you not like Netflix?	Hvorfor er dere ikke som Netflix?
D	This is the digital behavior now.	Det er det som er den digitale oppførselen nå.
E	Some think that it [nudging] fixes everything. Many people come to me and say 'Yes, you who are an expert on behavioral psychology, can we just fix and fix...' then there are several people that think of nudging as a quick fix, in my opinion. [...] But i also experience that it is quite little awareness around it [nudging], especially with having an understanding of how this can influence people. [...] My experience is that in NAV, one focuses on getting the info out correctly.	For noen tror at det [nudging] fikser alt. Det er mange som kommer til meg sånn Ja, du som er sånn ekspert på atferdpsykologi og ja, du som er sånn, her kan vi bare liksom fikse og fikse. Så det er mange som tenker det litt sånn quick fix synes jeg. Men jeg opplever at det er en ganske sånn.. Ganske lite bevissthet rundt det egentlig, særlig det her med at de må forstå hvordan påvirker dette her folk. [...] Jeg opplever at i nav er man mer opptatt av å få ut informasjonen korrekt.

continued from previous page

E	I think we do it [nudge users] anyway, but that it is unintentional, and I think that is worse. Then I am thinking that we can not say that we have not started to nudge users, because we are. We are nudging with fear and dread, [...] we have to nudge in a way that motivates by simplifying and clarifying.	Jeg tenker jo at vi gjør det jo uansett, så at det bare blir sånn bevisstløst da. Og jeg tenker det er det verste. Så tenker jeg at vi kan ikke si at vi ikke at vi har vi begynt å bruke nudging, fordi vi gjør det. Vi nudger frykt og redsel nå, [...] vi må nudge på en sånn måte at det er både motiverer med [...]forenkling og det å tydeliggjøre.
E	And then there is this about micro steps. You can not achieve everything at once.	Og så er det jo her med mikro steg da sant? At du får ikke til masse på en gang.
E	You should be clear about what you are trying to influence.	Man skal hele tiden være sånn tydelig på hva er det man egentlig prøver å påvirke.
F	I have experienced that one often spends so much time on gaining insight that one does not get the work done. Time and money runs out, and then you are left with a report. This is not in the best interest of the user, nor NAV, as they need good solutions right away.	Jeg har opplevd mange ganger at man bruker så mye tid på innsiktssarbeid at man ikke får gjort noe. Da var pengene slutt og tiden over, og så.. Ble det en rapport på en måte, og det er jo ikke til det beste for brukerne, i hvert fall ikke i nav da, de trenger jo gode løsninger nå med en gang.
F	It might be that they experience the application as hassle-free [...] and submits, thinking “yes, this went well”, [...] and then you get a letter saying “no, you will not receive that much [...]”, and then they are boiling with anger, but we do not see that.	Det kan jo hende de opplever selve søknaden som problemfri. [...] sender det inn, og tenker, yes, det her gikk jo kjempebra. Tipp topp, og så får du et brev fra nav. Det er bare Nei nei, du får ikke så mye som det [...] og så bare kanskje koker det i hodet dems, men det får vi ikke vi med oss.
G	It is not a very discriminating nudge, it is quite safe that way.	Så er jo ikke det en veldig diskriminerende nudging akkurat, man er ganske trygg sånn sett.
G	One might not have been aware that one is nudging.	så er det litt tilfeldig, at man kanskje ikke har visst at nå driver man med nudging.
G	It is almost better to give everyone the same [nudge], even if that is also wrong, that is at least not active discrimination.	Og da er det nesten bedre å gi alle det samme , selv om det er også feil, så er det hvert fall ikke en aktiv diskriminering da.

K Translated Figures

This appendix includes all figures included in the thesis. The text has been translated by the researchers, as the digital platform is not available in English.




This application also applies for those who are applying for attendance allowance for a person that is over the age of 18.

In order to apply for attendance allowance you need a medical certificate or a document that confirms that the child has been in treatment/medical examination at a hospital or other medical centers.

If you do not have the documentation available when applying, it can be forwarded

Figure 16: Translation of Figure 3

Upload medical certificate



This is where you upload the medical certificate or a document that confirms that the child has been in treatment/medical examination at a hospital or other medical centers. This is done, either by taking a picture or scanning it.

If you do not have the documentation now, [you can forward it](#)

Figure 17: Translation of Figure 4

Does the child have a chronic disease or disability?

Yes No

i The application for additional days and care benefit only applies for those who have a child with a chronic disease or disability.

Continue

Figure 18: Translation of Figure 5

Do you have a child with a chronic disease or disability?

Yes No


 The application for additional days and care benefit is **only** for those who have children with a chronic disease or disability.


Figure 19: Translation of Figure 6

When will you receive a response?

We can only process your application when all necessary documentation is received.

See the [case processing time](#) relevant for your county

Figure 20: Translation of Figure 7

 **Application Form**
Most people can apply digitally. When applying digitally, sign in to «Your NAV» (in Norwegian «Ditt NAV») with a digital identification service (in Norway this is called «bank-id»)

[ENTER THE DIGITAL APPLICATION](#)

If you do not have «bank-id», [this is how you set it up](#).

[Enter the paper form](#)


Figure 21: Translation of Figure 8

We recommend that you apply and submit all documents digitally. This is both more secure and faster. You can send all paper documents digitally when you have a digital identification. [This is how you get digital identification](#)

Figure 22: Translation of Figure 9

4: Download NAV 09-12.15

The application must be filled out and signed

 It is important that you use Adobe Acrobat Reader when filling out the form. [Download Adobe Acrobat Reader](#) (the link will open a new window)

[DOWNLOAD](#)

Figure 23: Translation of Figure 10

Short description of attendance allowance for people over the age of 18.

- ✓ Attendance allowance is for you who cannot work because you need to be with a disabled person over the age of 18. In addition the person is seriously ill and need constant care and assistance.
- ✓ The amount of attendance allowance you will receive is dependent on how much you can work and how much the person you are looking after is taken care of by other care services. Care services can be a care home, a personal assistant or other organized services.

Do you want to apply now?

If you have digital identification, you can apply digitally. [This is how you set up digital identification](#)

APPLY DIGITALLY

APPLY BY PAPER

Figure 24: Translation of Figure 11



Figure 25: Translation of Figure 12

Upload Medical Certificate



This is where you upload the medical certificate or a document that confirms that the child has been in treatment/medical examination at a hospital or other medical centers.

We cannot process the application until all relevant documents have been received. If you do not have the documents available now, we recommend that you postpone submitting the application until you have them. If you can not postpone submitting the application, you can forward the documents at a later time, but this need to be done as soon as possible.
[This is how you forward documentation](#)

Figure 26: Translation of Figure 13

Have you received medical certificate?

Yes

No


 In order to get a response to the application as quickly as possible, we recommend that you send the medical certificate with the application. If you do not have this available now, forward it as soon as possible. We need it to process your case.

Figure 27: Translation of Figure 14

