

Change Management in Digitalization of Higher Education: A Case Study of MOSO Implementation

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Preface

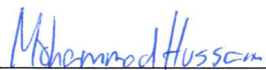
This study is written as the finalizing thesis in the Master's degree in Information Systems at the University of Agder. The thesis is part of the course IS-501 Master's degree in Information Systems and is written from January 2020 to June 2020.

The course aims to obtain academic specialization within a relevant subject area and use theoretical knowledge and scientific methods to answer a problem. The study's purpose is to investigate how higher education institutions in Norwegian have implemented MOSO and the challenges they faced.

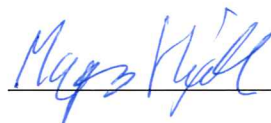
We want to thank our advisors, Professor Margunn Aanestad and Associate Professor Cathrine Edelhard Tømte at the Department of Information Science, for constructive feedback and support. We are grateful for the guidance we received along the way, and without your motivation and help, this study would not have been completed.

We would also like to thank all the respondents that have used time and resources to help us get valuable insight. This research would not have been possible within their effort.

Kristiansand, 4th June 2020



Mohammad Hussain



Magnus Høvik

Summary

Context:

During the past two decades, we have witnessed a wave of digitalization that has affected every part of society, and digital solutions have become a part of peoples' everyday life. Digitalization implies changing traditional processes by introducing some form of digital technology. Implementing new technology can be a difficult task for an organization, not just because of the many risks associated with new technology, but also because it is a process that often includes organizational changes.

Purpose:

In our society there is a demand for digitalization, especially in the higher education sector. There has not been a lot of research focused on the area of implementation strategies in higher education. The purpose of this study is to investigate how higher education institutions have implemented MOSO, a technology used in practicum supervision, and what challenges they have faced.

Methods:

This study has followed a qualitative approach, with semi-structured interviews as the primary source of data collection. The interviews were conducted in Norway with respondents that had a central role with the implementation of MOSO within their university or university college. A total of 9 interviews were conducted, with respondents from 5 different higher education institutions and the CEO of MOSO AS. The interviews lasted from 35 to 55 minutes.

Results:

The first part covers the implementation of MOSO. Higher education institutions have used different implementation strategies when implementing MOSO. The most common strategy was to use a form of an incremental approach, where they only let a specific number of users try the application. The second part covers the challenges the institutions faced. The most important challenges found are: having a project team consisting of the right people, involving the stakeholders early, and communicating the vision for change.

Conclusion:

The goal of this research has not been to conclude on what practices are best, or present a list over the top challenges that can occur in an implementation project. Instead, this is a descriptive study where we have tried to present how different higher education institutions have conducted an implementation process and which challenges they have faced.

Keywords: higher education; change management; implementation strategies; implementation challenges

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1.0 Introduction

Digitalization is not a new phenomenon but has gained a lot of traction in the last two decades. We are currently in a wave of digitalization leading to innovations for businesses and society. Parviainen (2017) defines digitalization as «*changes in ways of working, roles, and business offering caused by adoption of digital technologies in an organization, or in the operating environment of the organization.*» Another definition is used by Yoo, Lyytinen, et al. who defines it as:

“Digitalization goes beyond a mere technical process of encoding diverse types of analog information in digital format (i.e., “digitization”) and involves organizing new socio-technical structures with digitized artifacts as well as the changes in artifacts themselves” (Yoo et al., 2010).

These definitions show that digitalization is more than just technology and can be described as a process that includes two elements. The first is that digitalization introduces some form of new technology and the second is that digitalization embraces people, processes and organizational changes (Kurupparachchi et al., 2002).

In recent years there has been a demand from the Norwegian government that the higher education sector must use more digital tools in order to raise the overall quality of education (UNIT, 2019). According to a whitepaper published by the Norwegian government, the use of technology in education is often teacher-controlled or individual, and it is only to a small extent controlled by the university administration (Kunnskapsdepartementet, 2016). In 2016 92% of students had access to a smartphone and 98% of students had access to a laptop. Regulations also changed that allowed higher education institutions to make it mandatory for students to bring their own laptops. This measure was taken to increase digitalization in the higher education sector and create more digital interaction between students. Digitalizing the higher education sector can strengthen education for students by providing more reflection and learning. A requirement for this to be possible is that technology, organization and leadership are aligned (Kunnskapsdepartementet, 2016).

It is essential for any digitalization process to focus on change management and implementation, two closely related functions that have to be considered when digitalizing for the changes to get anchored in the organization (Kurupparachchi et al., 2002). Organizations have to focus on the people involved as well as the technology, or else the changes may not end up being implemented properly (Girrbach, 2018). The COVID-19 pandemic has shown the world how fast things can change and how dependent we are on digital tools and digitalization to be able to function. A big part of society has had to readjust and adapt to new digital solutions to accommodate to new government regulations. This shows the importance of technology in today's highly digital world.

There has been conducted a lot of research on implementation and change management (Kurupparachchi et al., 2002), however there is a gap of research on how higher education institutions implement new technology from an IS perspective. This a relevant topic as there is a need for a better understanding of the challenges that can arise when introducing new technology into higher education institutions. There is a need for more digitalization in this sector, as stated in the whitepaper issued by the Norwegian government. However, the implementation of new technology is still met with much skepticism. Some resist the changes that are happening and prefer the old-school methods, which makes digitalization slow. What's unique about the higher education sector is that they are experiencing pressure from multiple directions to digitalize. In addition to this, the sector has people and researchers with different backgrounds, who have their own thoughts on digitalization and what should be digitalized.

The purpose of this research is to study the implementation strategies higher education institutions use when digitalizing and uncover the common change management challenges the institutions faced, by using MOSO as a case study. Throughout this report, we will be answering the research questions listed below:

RQ1: What implementation strategies do public higher education institutions use when implementing MOSO?

RQ2: What are the challenges the higher education institutions have encountered when implementing MOSO?

To answer the research questions, we have conducted a qualitative case study where the data collection has been conducted through semi-structured interviews with respondents from the higher education institutions: The University of Agder (UiA), The Arctic University of Norway (UiT), Oslo Metropolitan University (OsloMet), Volda University College (HiVolda), and Western Norway University of Applied Sciences (HVL) as well as respondents from MOSO AS. For our study, we have selected the software MOSO as our case, which is a platform used for students in practicum supervision.

1.1 Motivation

Our personal motivation for researching this topic is that we share a common interest in digitalization and the challenges associated with new technology. These interests are related to our job as technical developers at MOSO AS where we have first-hand experience with the development of technology and the implementation processes.

1.2 Disposition

Chapter 2: Research contexts

Presents the context of this study. In this chapter, we first present the clarification of terms (2.1) and the definition of practicum supervision (2.2). We then present the organization MOSO (2.3), and their technology (2.4), before we go through the higher education institutions that the respondents are associated with (2.5).

Chapter 3: Theoretical Background

Presents the theoretical literature used in this study. In this chapter, we first go through different implementation strategies and the challenges that are linked to these (3.1). We then present different change management models (3.2).

Chapter 4: Research approach

Presents the research approach, and the reasons for our choices (4.1). We then elaborate further on the research strategy (4.2), and research design (4.3). Lastly, we present the ethical considerations taken in this study (4.4).

Chapter 5: Results

Presents the results of the data collection. We start by presenting the higher education institutions and how they have implemented MOSO (5.1). We then present the findings ordered after classifications of change management from Kotter's 8 step model (5.2).

Chapter 6: Discussion

Reviews the results from the data collection and discuss these against the research questions and previous literature. This chapter is divided into six main categories that we find sensible to discuss. These are the decision of MOSO (6.1), the introduction of MOSO (6.2), implementation strategies (6.3), the training of MOSO (6.4), the anchoring of MOSO (6.5) and the limitation of this study (6.6).

Chapter 7: Conclusion and implications

Answers the research questions in a short and concise manner (7.1). We then discuss our contribution to the practice field and point out suggestions for further research (7.2).

2.0 Research context

In this chapter, we present the context of this research study. This includes the clarifications of terms (2.1), practicum supervision (2.2), background information about the company MOSO AS (2.3), and their technology (2.4). We then present the higher education institutions chosen for this research (2.5).

2.1 Clarification of terms

The terms used by higher education institutions are many and can be confusing for people that do not work or are affiliated with the sector. We have therefore developed a list of definitions of some of the essential terms used by higher education institutions and in this research.

Table 1: Clarification of terms

Term	Definition
Higher education institutions	Is used as a collective term that describes both universities and university colleges.
School	Partner schools where students are sent out to complete their practicum period.
Practical Teacher Training	1-year education for people with higher education to be able to teach primary and high school.
Supervisor	Supervisors provide feedback to students in their practicum period. They are often teachers at a school and not faculty staff at a higher education institution.
Teacher / Lecturer	Teachers work at higher education institutions and are responsible for preparing, conducting, and evaluating the students.
Practicum	Programs designed to provide students with practical work experience.
Practicum supervision	Being supervised and observed by an expert while in the practicum period.
MOSO	MOSO stands for Mentoring and Observation Software. The organization and the name of their application are both MOSO. To avoid any confusion, we will, therefore in this report consistently call the organization MOSO AS, and the technology MOSO.

2.2 Practicum supervision

Practicum, also called internships, fieldwork, or field education, are programs designed to provide students with supervised practical work experience and help students learn how to apply knowledge and general principles to real-life situations (Ulvik et al., 2018). One of the main goals with practicum supervision is to teach the students the full scope of their professional role and it is used in professions like medicine, nursing, law, pharmacy, speech therapy, teacher education, and social work education (Naz et al., 2010).

The different professions structure practicum supervision in their own way, and there is often some variation in the terminology they use, how the responsibility is distributed, and the setting of where the practicum takes place (Gebhard, 2009). However, the roles of a practicum are generally the same and consist of; student, teacher, and supervisor. The way these roles interact may vary, but there will be some form of interaction between them. Some practicums are performed with students working in groups. This is common in teacher education programs, while other educations like practical teacher training often have individual practicums. One of the reasons for not having practicum in groups is that the students are located in different places, which makes it impossible to have group practicums.

The general process of a practicum period is that a student performs a lecture, fieldwork, or some other form of activity. This can be a student nurse working at a hospital, a police student following a policeman on duty, and many other scenarios. The student will then be observed doing an activity by only a supervisor or, in other cases, a supervisor and other students. The final step is for the student to receive feedback on how the activity was performed from those who observed.

2.3 The History of MOSO

Mentoring and Observation Software (MOSO) is a software program developed by MOSO AS for practicum supervision in higher education. The idea of MOSO came from the study “*Tablets as a digital tool in supervision of student teachers’ practical training*” (Mathisen & Bjørndal, 2016). The results from the study concluded that there was an improvement in supervision and feedback by using tablets, but that there was a need for software specifically tailored for supervision of students. The researchers wanted to take this idea and develop it into a product that could be used by students in practicum supervision.¹

The first challenge they faced was how to go from a research study to innovating with a new product. The University of Agder, where the study was conducted, did not have any programs to help researchers go from a research project to a new product. The rights for the project were given to the founders of MOSO by UiA to develop the idea. The requirements set for the product were a cross-platform application where the users bring their own devices and can provide and receive feedback by images, videos, and text.

¹ The description of MOSO AS is based on the interviews conducted, personal communication, internal and project documents. These are classified and not available to the public.

MOSO was developed in co-creation with researchers from UiA and UiT, and the universities have worked closely with MOSO AS to add new functionality and customize the application. This has resulted in many new features and ensuring that the application meets the customer's needs. The first paying customer was Halmstad University that started using MOSO in 2017. MOSO AS received financial help from Innovation Norway. Innovation Norway is a publicly owned entity that helps small to medium-sized organizations with financing, consulting, expertise, networking, and profiling (Innovasjon Norge, 2020).

MOSO AS has experienced that every university is different, and the market for selling to public universities differs from selling to regular organizations. The push to implement MOSO also differs. Sometimes the department of teacher education has heard about MOSO and wants to implement it. Other times it is the supervisors that are interested in exploring MOSO. There has been a lot of skepticism about implementing MOSO and technology in practicum supervision as it is a new concept that changes how planning is done and the way feedback is received.

MOSO AS has customers in both Norway and Sweden, and they are planning to expand to other countries within the next few years. The costumers consist of teacher education, kindergarten education, practical teacher education and other educations. As of January 2020, MOSO has the following customers:

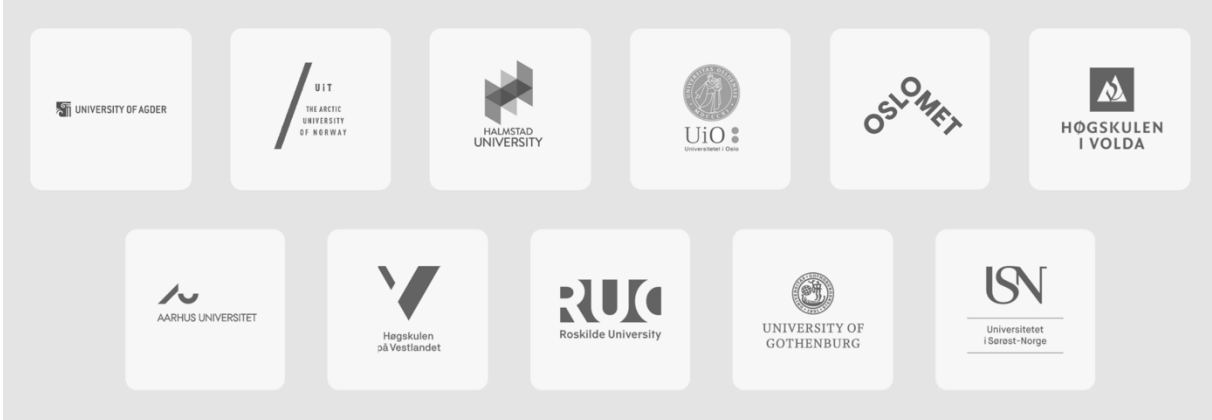


Figure 1: MOSO AS customers. (MOSO AS, 2020)

2.4 MOSO Platform

MOSO is a research-based multimodal software platform for practical student training (MOSO AS, 2020). While the software is designed and developed based on research from the teacher education field, the technology is not limited to only this field. It can be used in different ways, depending on the context of where it is used.²

MOSO's core functionality reflects how a traditional teacher training practicum is built up but adds the possibility for collaborative planning, and multimodal observation. This is done by feedback on plans, performing multimodal observations, and post-mentoring (Wennergren & Thornberg, 2018). *Figure 2* shows the five components that MOSO is based on;

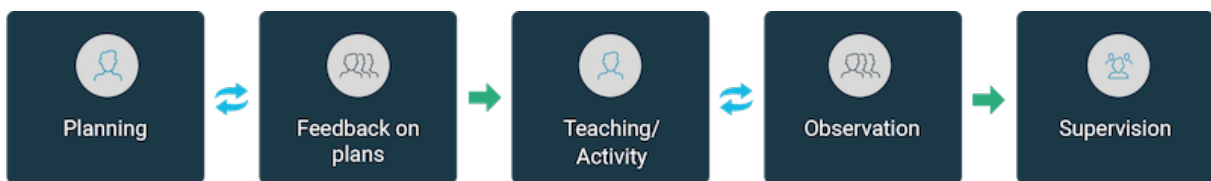


Figure 2: The five components of MOSO. (MOSO AS 2020)

The student will first make a plan and get feedback on this plan from a supervisor or other fellow students. This is usually done by text-comments as illustrated in *figures 3* and *4*. The next step is the observation phase, where the student performs the plan, and other students, supervisors, and teachers observe and give feedback with text-comments, pictures, or videos. All comments are uploaded into a feed in chronological order, and these comments are used in the supervision. This phase is often done face-to-face between the student and supervisors.

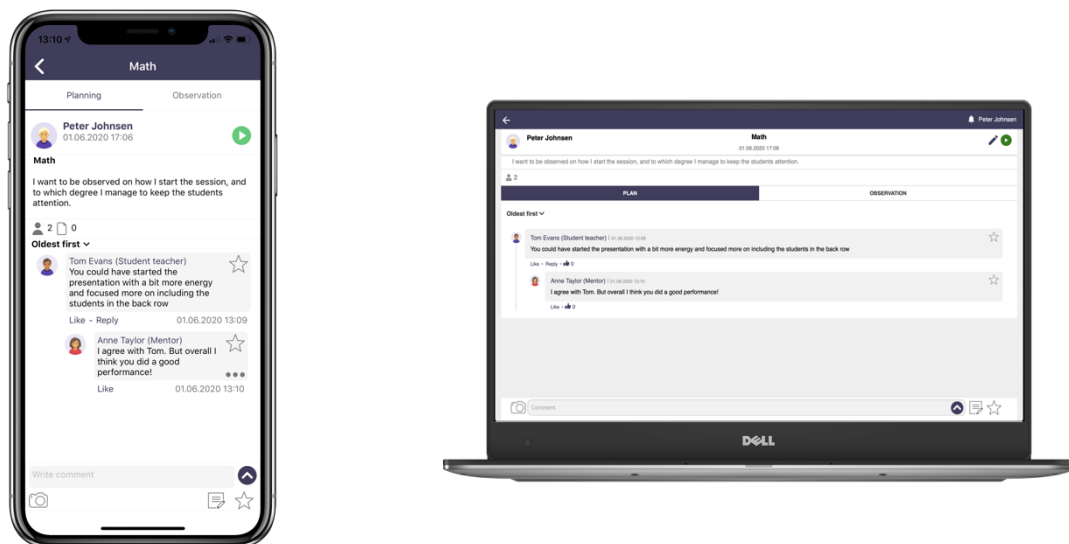


Figure 3: Screenshots of MOSO Application

² The description of the technology MOSO is based on the interviews conducted, personal communication, internal documents and project documents. These are classified and not available to the public.

This description of MOSO is not the only interpretation of how MOSO can be used. The software is designed not to determine how to perform supervision, but to amplify the benefits from practicum training by helping to structure and organize the practicum period. There are different types of practicum, and they are often organized in different ways, so the users will have to adjust how they utilize MOSO according to their needs.

2.5 Higher education institutions

The description of each higher education institution is, in addition to publicly available information, based on personal communication and the interviews conducted in this research.³

2.5.1 The Arctic University of Norway

The Arctic University of Norway (UiT) was officially opened in 1972 and is a research university based in Tromsø with over 15,000 students and 3,000 staff members (Lars, 2017). UiT has been through different merges the past decades, making it the third-largest university in Norway. The university is organized into eight faculties and offers a broad range of various study programs. The university is split into eight campuses spread around northern Norway (Håkon, 2020).

UiT is dedicated to Northern issues like the polar environment, climate research, and indigenous people, but in the context of this research, we have only looked into the Department of Teacher Education. The department has a wide variety of teacher educations from kindergarten teachers, primary school teachers, high school teachers and practical teacher training. The department is located at two campuses, one located in Alta, and the other in Tromsø (Universitetet i Tromsø, 2020).

2.5.2 The University of Agder

The University of Agder was founded in 1997 and is one of Norway's newest universities, which officially received its university status in 2007. In 2008 UiA had around 8200 students and 900 employees, as of 2019, UiA has almost 13.000 students and about 1440 employees (Universitetet i Agder, 2019). When comparing these numbers, we can clearly see a huge growth in numbers of students and employees, which shows that UiA and higher education have become more popular, or it can be seen as a response to society's need for higher education. The university which is split up into two campuses located in Kristiansand and Grimstad, has six faculties and a teacher education unit. Their teacher education currently offers study programs for students wanting to become kindergarten teachers, primary school teachers, secondary school teachers, upper secondary school teachers or practical teacher training students. Currently, there are about 1910 students attending one of these study programs.

³ The description of each higher education institutions is in addition to public available information based on the interviews conducted in this research.

The teacher education unit at UiA is not like all the other faculties at the university. They do not currently employ any teachers themselves and choose to use resources from other faculties and have them teach their students, which means the teachers that students actually meet often are not employees under the teacher education unit but are lent in for a few courses.

2.5.3 Volda University College

Volda University College (HiVolda), often referred to as HiVolda or HVO, is a university college located in Volda and was founded in 1994. The university college has around 4000 students and 350 employees. HiVolda currently has four faculties: Media and journalism, Humanities and Education, Social sciences & history and Arts & physical education. Most of the students at this university college attend a program under the humanities and education faculty. Numbers from 2017 show that 45% or 1892 students belong to this faculty (Terje Næss & Røsdal Trude, 2018). The faculty for humanities and education currently offers a variety of programs for students wanting to become teachers from kindergarten to secondary school.

2.5.4 Oslo Metropolitan University

Oslo Metropolitan University (OsloMet) is a university located in Oslo. The university was previously Norway's largest university college and was granted its university status in 2018. The university is one of Norway's newest universities, with 20 635 students and 2 157 employees (2020). The university has two campuses, one located in the center of Oslo and one near Lillestrøm. The university consists of four faculties: Faculty of Health Sciences, Faculty of Social Sciences, Faculty of Education and International Studies and Faculty of Technology, Art & Design.

The Faculty of Education and International Studies has education programs for students wanting to become kindergarten teachers, primary school teachers, or secondary school teachers.

2.5.5 Western Norway University of Applied Sciences

Western Norway University of Applied Sciences (HVL) is one of the biggest educational institutions in the country and was established in 2017 after merging the University Colleges in Bergen, Sogn og Fjordane, and Stord/Haugesund. The university college stretches over five campuses and 400 kilometers, which are located in Førde, Sogndal, Bergen, Stord, and Haugesund. There are currently about 16 000 students attending, and 1 400 employees at this university college split up between these campuses. The university college has four faculties, including faculty of Business Administration & Social Sciences, Faculty of Education, Arts & Sports, Faculty of Engineering & Science, and Faculty of Health & Social Sciences. The Faculty of Education, Arts, and Sports has education programs for students wanting to become kindergarten teachers, primary school teachers, or secondary school teachers.

3.0 Theoretical Background

In this chapter, we present the theoretical concepts used in this study. We start by presenting prior literature on different implementation strategies (3.1) before presenting different change management models (3.2). These terms are used as the foundation of this research and are referred to throughout the report.

3.1 Implementation strategies

This research focuses on the information technology industry, and the definition of implementation refers to an “*organizational effort directed toward diffusing appropriate information technology within a user community*” (Cooper & Zmud, 1990). This definition can be further explained by “*implementation is a post-sales process of guiding a client from purchase to use of software or hardware*” (Meyfroidt, 2009). From these two definitions, it is possible to say that there are two main perspectives to implementation. The first is from the clients’ or customers’ views and how they organize and communicate an implementation. This view focuses on how the client has reacted to the implementation and which activities they have used to mitigate any challenges. The second perspective is from the providers’ or sellers’ view and how they facilitated and supported the implementation. What actions they have taken to help the client have a successful implementation.

Implementing new technology can be a difficult task for an organization, not just because of the many risks associated with new technology, but also because it is a process that often includes organizational changes (Kurupparachchi et al., 2002). People can fear that their position will be affected by the new technology and actively work against the implementation to protect their position (Paton and McCalman, 2008, p. 52). There can also be a power struggle between multiple people where it becomes more important to win than to reach an agreement and find the best solution (Markus, 1983). Power and change are strongly linked together, and those with the most power often have the most potent driving force and, therefore, can accept or reject changes. New technology can alter the way a process is done, or it can remove a process altogether, and it is therefore vital, according to Hertzum (2002), that organizations also focus on the impact new technology can have on employees, culture, and processes.

The product life cycle is a commonly used term in describing the process a product goes through from it is introduced to the market to the product is removed (Levitt, 1965). The different life cycle steps are market development, market growth, market maturity, and market decline. Organizations should have an understanding of what kind of product they are implementing. Is the product in an early development phase often referred to as pilot or beta products, or is it a well-established product? There are different challenges and benefits in both cases. Implementing a product that is in its early stages comes with more significant risks as the product has not been through an extensive testing phase, making the product vulnerable to errors. The benefits are, on the other hand, that a pilot product can serve as a trial run for the program, and the users can help determine how the finished product should be

(Fine, 2002, p.23-24). This can, in the long run, ensure an even better product. Implementation of unfinished products and being part of the development phase is a relatively new phenomenon and there is little information about how to do this or what pitfalls may occur. It is common to implement well established and thoroughly tested products because this often comes with lesser risks as the product has been implemented by many others. The negative aspects of implementing well-established products are that the organizations do not have the same possibility to affect the design and functionality of the product (Fine, 2002, p. 11-15).

There are different ways to implement a product, and the choice of implementation strategy can contribute to the success or failure of a project (Madkan, 2014). Therefore, the decision of implementation approach should be made based on which approach will most likely lead to a successful implementation. Having a well-planned strategy before beginning an implementation project can be vital for a successful outcome. There are a few basic approaches to implementation strategies that an organization can use when implementing a product. The most common implementation approaches are: Big Bang, Incremental, and Hybrid (Madkan, 2014). We will in the following chapters, try to explain the differences and what benefits and challenges each approach offers.

3.1.1 Big Bang

The *big bang approach*, like the name suggests, involves a quick rollout to multiple users at once, and such a rapid change can cause frustration and anxiety if everyone is not 100% on board with the changes being implemented (Owens, 2008).

With this approach, the scope is vast and affects many users at the same time. It requires significant resources to plan and implement this type of rollout. There is a possibility that early errors will affect many users, and unstable or bug-ridden technology can turn people off the new system (Hertzum, 2002). However, there are some advantages to using this strategy. The time it takes from implementation to users benefitting from the system is short, which gives this approach a faster return on investment. There is also the benefit of excluding the need to run two systems simultaneously, which can be confusing for the users and expensive for the organization (Owens, 2008). Some of the key criteria for success using this approach are that leadership must be assigned and given the proper authority to handle questions quickly, the scope must not be too big, and smaller businesses have the best odds.

3.1.2 Incremental

The *incremental approach*, also called the phased approach or region-wide release is the contrary to the big bang approach. Incremental approaches introduce the system slowly and in planned phases, unlike the big bang where the whole system is implemented at once. The implementing process is usually done by either replacing a legacy system gradually or to only a subset of users (Madkan, 2014). When the initial transition is successfully achieved, the organization can expand with new functions and include additional organizational units. This

approach can the organization avoid some of the negative consequences common with the big-bang approach, as fewer users will experience the faults and errors (Hertzum, 2002). By using an incremental approach, the organization has the possibility to limit the scope and perform reviews in between phases to get feedback. This feedback can be used by organizations to change parts of the implementation and result in a more successful implementation (Culp et al., 2005).

3.1.3 Hybrid

It is also possible to use a combination of the approaches often called a hybrid approach. The organization can decide to use a big bang approach for smaller business units, and an incremental approach somewhere else (Madkan, 2014).

3.2 Change Management

There can be many reasons why an organization would want to, or have to, implement something. Some of the most typical incentives to change are mergers and acquisitions, innovation, technology, restructuring/re-organizing, declining sales or market share, globalization, expansion and growth and sense of urgency (Stanleigh, 2008). *Change management* has been defined as: “*the process of continually renewing an organization's direction, structure, and capabilities to serve the ever-changing needs of external and internal customers*”(Moran and Brightman, 2001) and the term is used to describe how organizations manage initiatives to implement strategies and methods for effective change successfully.

There are many ways organizations can adapt to change, and various studies and research has tried to develop philosophies, theories, models, and techniques that all try to explain best practices that organizations should follow when they are undergoing changes (Todnem By, 2005). One popular change management model is the 8-step model developed by John Kotter in 1995. He studied how more than 100 companies tried to remake themselves into better companies and used the findings to create eight steps for proper change management (Kotter, 1995). This research uses Kotter's 8 step model as a basis to get a better understanding of the different challenges and changes that occur when implementing new technology. *Table 2* presents the eight steps and gives a short description of each.

Table 2: Kotter's 8 step change management model (Kotter, 1995)

Step	Definition
Create Urgency	If employees sense a form of urgency, this might motivate and engage them.
Form a powerful coalition	Driving change requires people with the right set of skills and personalities. It is important to create a good team in the early stages that have the right combination of roles, information, expertise, and reputation.
Create a vision for change	Develop a vision that is relatively easy to communicate with stakeholders and employees.
Communicate the Vision	Under communication can have a fatal impact on a project, so just creating a good vision is not enough. It is also important to be transparent and frequently communicate with all parts involved. Let them know what is happening and why.
Remove obstacles	The new vision should not be stopped by unnecessary obstacles. Therefore, it is important that the vision gets support and that roadblocks are removed.
Create Short-term wins	Without short-term wins, people can give up or lose interest. So, it is important to not just focus on the end result, but also to set small goals and recognize achievement.
Declaring victory too soon	Real change runs deep, and quick wins are only the beginning. The main goal is to achieve long term changes.
Anchor the changes in corporate culture	It is important that the change is reinforced into the organization culture because a change that is not fully integrated into the organization's culture is subject to degradation as soon as the pressure for change is removed.

Another well-known change management model is Lewin's Change Management Model developed in 1946 (Rosenbaum et al., 2018). Lewin's model is a relatively simple model compared to Kotter's, as it only consists of the three stages; unfreezing, moving and refreezing. The first step implies that the organization needs to get ready for change by overcoming the strains of individual resistance and group conformity (Kritsonis, 2005). The second step is where the change is implemented. Here it is essential with good leadership and communication with the employees (Burnes, 2004). The last step is where the changes are accepted in order to ensure that new changes are relatively safe from regression, and the

change should now be a part of the everyday routines (Burnes, 2004). The reason for including Lewin's model in addition to the 8-step model is to not only present a simpler model but also to show how different change management models can be. This is to point out that there is no blueprint that can tell an organization how to deal with change. Change management depends on many different aspects, and the most important one is that the organization finds a model or theory that fits their needs.

3.2.1 Change resistance

There are many reasons why someone would resist a new system or software. According to Laumer and Eckhardt (2012) a user may reject the system altogether, use parts of its functions, actively resist it, unwillingly accept it, or embrace it fully. The reason for resisting changes can also be a lack of involvement and information uncertainty (Kanter, 2012). It is therefore important that all involved parties get information about what is changing and why the change is needed. Lack of incentives for change can be another basis for resistance. If users do not see the benefits of change, they will not have the necessary motivation to accommodate them (Paton and McCalman, 2008, p. 187-188). Poor technology, immature systems, or misalignment with work tasks are other challenges that can occur (Markus, 1983). The fear of not being able to master the new system or being exposed by the new system are, according to Khalil (2013), other common change resistance obstacles. Learning new things can, for many, be a challenge, and it is often easier to just continue doing what "you always have done". The resistance to change can be summarized as people being creatures of habit, and it is therefore important when implementing new technology to value their needs and understand that within the organization, there can be different subcultures that react differently to change. The employees are often the end-users of the technology and are the ones that are going to use it on a daily basis and will experience the faults and errors.

4.0 Research approach

In this chapter, we present the reader with insight into the approach that has been used to answer the research questions. We explain how this study was designed, how data was collected, selection of respondents and the process of analyzing the data. We also look at the importance of being ethical as researchers. Below, in *figure 4*, you can see a model outlining our research process.

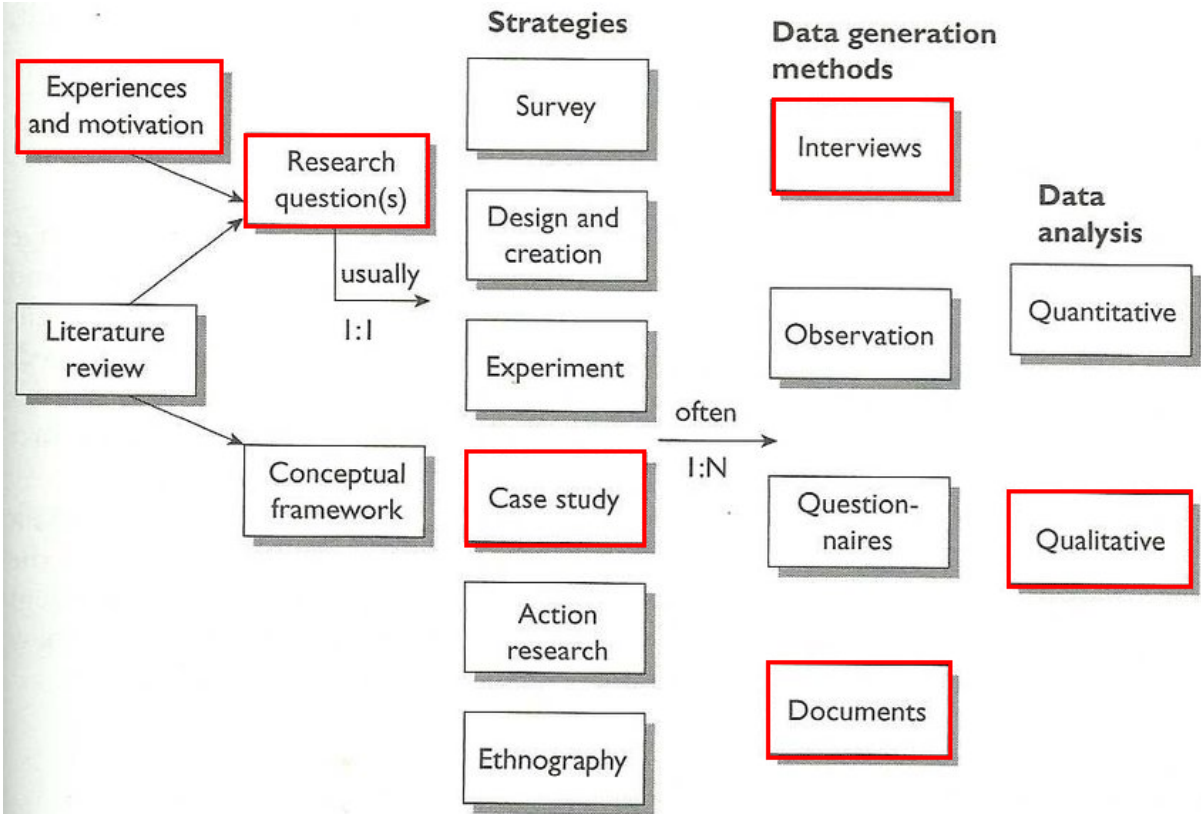


Figure 4: Model of the research process (Oates, 2006, p. 33)

4.1 Research approach

This research has followed a qualitative approach to answer the research questions. The reason for choosing a qualitative approach is that with this research, we wanted to get a high level of understanding and not generalize the result from a bigger set of respondents, as is common with quantitative research (Newman, Benz, and Ridenour, 1998, p. 1-5). Qualitative research approaches are useful when the researcher wants to answer questions about experiences, meanings, and perspectives by examining various social settings from the standpoint of the participants (Hammarberg et al., 2016; Lune & Berg, 2016). The data collection in qualitative research is typically collected in the participants' environment, and data analysis is inductively built from particulars to general themes (Creswell 2014, p 3). By choosing a qualitative approach, we are able to access unquantifiable data about actual people, and this allows us to get a better understanding and perception of how the respondents

think and feel. One challenge with qualitative research is the interpretation process during and after the interviews. This process is exposed to subjectivity, and misconceptions may color the researchers' view of a phenomenon. It is therefore important to have an objective view of the retrieved data (Oates, 2006, p. 198).

This research looks more in-depth into what implementation strategies higher education institutions have used and the challenges they have faced when implementing new technology. It is possible to argue that these questions could have been answered with a quantitative approach, but we would be limited to simple questions and this would have prevented us from getting explanatory and interpretive answers. It is based on these assumptions that a qualitative approach is more suitable for this research.

4.2 Research design

A research design is a plan for how the study will be conducted, or in other words, the blueprint of the research. There are at least four fundamental problems that research design should cover; what research or question to study, what type of data is relevant, what data to collect, and how to analyze the results (Lune and Berg, 2016, p.19). We presented the research question in the introduction and will, in this chapter, present how higher education institutions and respondents were selected, how we collected the data, and how we analyzed the data.

4.2.1 Embedded case study

The research strategy applied in this study can be described as an embedded case study. There are different definitions of what a *case study* includes but a commonly used definition is from Yin (2009, p.18):

“An empirical inquiry that: investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident”

The definition of a case study can be further explained as something that focuses on one instance of the “thing” that is to be investigated. This could be an organization, a department, an information system, or just a decision (Oates, 2006, p.141).

An *embedded case study* differs from a traditional case study by including other sub-units of analysis (Yin 2011, p. 79-85). In this research, we chose an embedded case study because we wanted to research how different entities have adopted a specific phenomenon. The phenomenon, in this case, is the implementation of the MOSO software, and the entities are higher education institutions. The reason for choosing MOSO is mainly because of our connection with the company and technology. We both work for MOSO AS as Technical Developers where our main task is maintaining, testing, and developing MOSO. This role and our relationship with MOSO’s customers put us in a position where we are able to get

valuable insights not many other researchers are able to get. The choice of MOSO was also based on how relevant the technology they deliver is and that their customers are within the higher education sector. Combining these factors give us a case-study within a very complex and exciting sector.

We could have chosen to mainly focus on one university where we conducted multiple interviews to get a deeper understanding of the specific challenges at that university. However, by only choosing one university, we would not have received as good overview and understanding of the common implementation strategies and challenges that occur when higher education institutions implement new technology.

4.2.2 Selection of Higher Education Institutions

The main criteria we had when choosing higher education institutions to study were that they had to have implemented MOSO and used it for a period of minimum six months. We did also consider including institutions that were in the process of procuring the technology, but this was set aside as they had not gotten far enough in the process, and planning to do something is not the same as actually doing it. Including these could have affected the findings as it is hard to predict what challenges will arise before they appear, and it is also not within the scope of this research. We also set the criteria that the institutions had to be in Norway, and this was done to exclude any cultural or organizational differences between countries. The result of excluding universities from other countries than Norway and the fact that MOSO is a relatively new product gave us a relatively small selection pool. There are a total of seven universities and university colleges in Norway that have implemented MOSO.

We wanted to include UiT and UiA as these have used MOSO since it was released, and they were the first ones to implement the technology as part of a pilot project. HiVolda and HVL were selected because of the number of users they have using MOSO, and because they are planning on increasing the focus on MOSO in practicum supervision for their students. The reasoning behind selecting OsloMet was that they had implemented MOSO and tried it over two semesters but decided not to renew their contract as they did not see any benefits with using the technology.

Table 3: Overview of higher education institutions

Higher education institution	Implemented MOSO	Still using MOSO
University of Agder (UiA)	2016	Yes
The Arctic University of Norway (UiT)	2016	Yes
Volda University College (HiVolda)	2017	Yes
Western Norway University of Applied Sciences (HVL)	2018	Yes
Oslo Metropolitan University (OsloMet)	2019	No

4.2.3 Selection of Respondents

The selection of respondents included people with hands-on experience with MOSO and people that were directly or indirectly involved in the implementation of MOSO. This included respondents with the roles of practicum coordinators, practicum supervisors, professors, advisors, and program directors. We decided to extend the selection to include both university staff with hands-on experience and researchers on the field. This was done to get different perspectives on the research questions and to help us get a broader sense of the technology and how higher education institutions are organized. We have followed guidelines from the Norwegian Centre for Research Data for anonymizing respondents, and all respondents and their statements will, therefore, be identified by an ID number, e.g., Respondent ID2.

The selection method used in this research is a combination of *purposive sampling* and the *snowball method*. Due to our relationship with MOSO, the primary method was purposive sampling as we already had an established network of contacts within the higher education sector and the research community related to MOSO. The snowball method was used at universities where we did not know if our initial respondents were in possession of the right information. We then used these respondents to get references to other respondents that could be more relevant. The snowball method which is often called snowball sampling or chain-referral sampling is a nonprobability sampling method used when the participants are hidden or hard to reach (Heckathorn, 2011).

4.2.4 Interview guide

To get a certain level of structure, we used an interview guide when conducting the interviews. The interview guide was developed based on Myers and Newman's (2007) research on semi-structured interviews. Because of the diversity of the respondents and their position and relationship with MOSO, we created two different interview guides. Each guide had an opening, introduction, key questions, and a closing. The differences between the interview guides were within the key question. Creating two separate interview guides made it possible to ask more specific and relevant questions to each respondent based on their background.

The interview guide contained the topics we wanted to gather information about. The themes were defined based on previous literature and supplemented with our knowledge about the topic. As we have experience with the implementation process we were able to develop some of the questions based on this knowledge.

When interviewing university staff, we started the interview by asking about the respondents' background information, where they had heard about MOSO and why they decided that MOSO was the right tool for them. The next step was to ask about usage statistics, which naturally lead them to talk about what they thought of how successful the implementation had been in regard to usage. Lastly, we asked about challenges, or what they would have done differently if they did not think the implementation was successful.

When interviewing respondents affiliated with MOSO AS we started by asking about their background information and background information about MOSO AS. We focused most of our time on details about their customers, what implementation strategy is often used, how stakeholders, researchers and customers view MOSO, and what plans they have for the future.

4.2.5 Data collection

The data collection was done through interviews with respondents that had relevant knowledge and experience with MOSO. We conducted all of the interviews individually, and this was purposely done to enable each respondent to speak freely and without boundaries (Ahrens and Dent, 1998). A total of 9 respondents were interviewed. Before the interview, all participants were briefly introduced to our research and were presented with a general interview guide. The reason for providing them with the interview guide was to give them a better understanding of the study and the possibility to prepare themselves.

In principle, data collection in a qualitative embedded case study can be carried out in several ways. We chose semi-structured interviews as our primary source of data collection. Semi-structured interviews are better than structured interviews when the purpose is to discover new information. With semi-structured interviews, the questions are predetermined, but the interviewer is free to ask for clarification (Griffie, 2005), this lets the researchers get insight into individual personal knowledge, opinions, and experience (Hammarberg et al., 2016). We chose to conduct semi-structured interviews because the primary purpose of this study is to reveal how universities have implemented MOSO and to discover the challenges that they have faced when doing this. By conducting semi-structured interviews, we were able to guide the interviewee through with a predefined list of themes, while at the same time allowing the interviewees the possibility to speak freely and introduce relevant topics and issues of their own.

We tried to conduct all interviews face-to-face as we prefer the ability to read the respondents' interpretation through other factors such as body language and facial expressions. Due to the geographical distances between the institutions and the COVID-19 situation, we were prevented from meeting all of the respondents physically and had to conduct some interviews through video conference tools such as Zoom or Skype for Business. This affected the quality of the interviews to some degree as we experienced network issues and lost some of the data because the audio was inaudible. We had set aside 60 minutes for each interview, but not all respondents had the time or more information to give, so the interviews ranged from 35 minutes to 55 minutes. In *table 4*, we present the respondents and their role, which higher education institution they belong to, the date of the interview, the duration of the interview, and if we conducted the interview face-to-face or over video conference.

Table 4: Overview of interviews

Role	Organization	Date	Duration	Type of interview
CEO	MOSO	14.02.20	35 min	Face-to-face
Practicum coordinator	UiA	18.02.20	50 min	Face-to-face
Supervisor	UiA	04.03.20	50 min	Face-to-face
Practicum leader	UiA	10.03.20	55 min	Face-to-face
Supervisor	UiT	12.03.20	35 min	Video Conference
Lecturer	OsloMet	23.03.20	40 min	Video Conference
Advisor	HiVolda	26.03.20	35 min	Video Conference
Program director	HVL	31.03.20	45 min	Video Conference
Researcher	UiA/MOSO	15.04.20	50 min	Video Conference

We started every interview by presenting the respondents their rights and a declaration of consent document, which they were required to sign as this is a demand set by the Norwegian Center for Research Data (Norwegian Center for Research Data, 2019). After the formal introduction, we continued by asking some general questions about the respondent. This was done to ease up the respondents (Oates, 2006, p.189) and to get a general understanding of the interview object and their background. We then proceeded with the key questions. These were the questions that would make the foundation of our data collection. We tried to ask as neutral and objective questions as possible to make sure that the interview answered their opinion and not what they thought we wanted to hear. We managed to conduct semi-structured interviews to some extent, but with some of the respondents, the interviews were more structured than semi-structured. The reason for this can be our lack of experience as interviewers. We found it appropriate that one was responsible for leading the interview, while the other supplemented the interview with follow up questions.

4.3 Data Analysis

To analyze the data, we have conducted a thematic analysis. The reason for choosing a thematic analysis is its flexibility and the ability to identify, analyze, and report patterns within data (Braun and Clarke, 2006). The analysis has been a hybrid between an inductive and deductive approach. An *inductive approach* involves allowing the actual data from the interviews to determine the concepts and themes while a *deductive approach* involves coming to the data with some preconceived themes you expect to find based on existing knowledge (Caulfield, 2019). The reason for combining an inductive and deductive approach was to get a better understanding of the data by first going through it without any pre considerations. This made it possible to find interesting topics that may have been lost if we did not have an open mind about what to include. The analysis was an iterative process where most of the steps were repeated to get the best results. Below we describe our process of analyzing the data collected:

The first step was to familiarize ourselves with the data. This was done by transcribing all interviews and reading thoroughly through the data multiple times. We tried to get an overall

and general understanding of the information. Each interviewee had different perspectives and ideas, and their hands-on examples gave us insight into how they had implemented the system and what challenges they had experienced. For a better understanding of the data, the role of transcribing was as far as possible evenly dealt, and the one who did not transcribe had the task of reading the transcription multiple times to familiarize themselves with the data.

After familiarizing ourselves with the data, we started to organize the transcribed data and create initial codes. To help structure the data and to obtain a comprehensive overview of all the transcriptions, we used the software NVivo. We started off by analyzing the data with an inductive approach, where the coding process was done with open coding. The process of open coding is to break down raw data into segments in order to interpret them. Open coding made it possible for us to develop ideas and concepts that we found in the actual transcripts rather than being concerned about relating them to any existing literature. In this step, we were therefore not limited by any framework or theory, and we analyzed the interviews from the perspective of implementation strategies, implementation challenges, and criteria for success.

We repeated these steps on a broader level, where we looked for themes, rather than codes. We used the codes discovered and tried to correlate them to the 8-step model provided by Kotter. Many of the codes related to more than one of the steps and we therefore had to organize and sort the codes to map them with a specific theme. After we had linked the themes, we had to go over and review the codes. This process included the task of deciding to divide, drop, or keep the different codes. The last process was writing the report by using the data collected and the themes we found while analyzing the data.

4.3.1 Data quality

The most used criteria for evaluating data quality is reliability and validity (Golafshani, 2003). *Reliability* is usually defined as to which degree the results are consistent over time and give an accurate representation of the population (Long and Johnson, 2000). *Validity* can be divided into internal and external validity. Internal validity refers to the truth of the study and if the correct data has been collected. External validity on the other hand refers to the truth in real life and if the findings can be transferred to other settings and situations. However, there are some researchers that argue that the concepts of reliability and validity are inadequate when it comes to judging qualitative data (Golafshani, 2003). Therefore, to evaluate this qualitative research, we have used the “Parallel criteria to evaluate interpretive studies” presented by Guba & Lincoln (1989), as this is a more suitable choice for qualitative research (Byrne, 2001). *Table 5* presents the different criteria areas, their goals and how to accomplish them.

Table 5: Criteria Used to Evaluate this Research Study (Guba & Lincoln, cited in Munkvold, 1998, p. 20)

Parallel criteria	Goal	Tactic
Credibility	Establishing the match between the constructed realities of respondents (or stakeholders) and those realities as represented by the evaluator and attributed to various stakeholders	Field work and longitudinal observation Discussion of data and results with external peers and informants (member checks)
Transferability	Presenting a sufficient detailed account of the findings as to enable judgement by the reader of how these findings can be transferred to other contexts	Thick description
Dependability	Ensuring that methodological changes and the interpretive process are documented so that the reader can follow the process and the choices made by the reader	Making the research process explicit
Confirmability	Ensuring that the data, interpretations and results are grounded in the context and not just a result of the researcher's imagination	Making data available Describing the logic used for moving from data to the final results.

To achieve *credibility*, we have tried to be neutral and present the findings as objective as possible. This was especially important in this research considering our role as researchers and employees at MOSO. Balancing these roles has been crucial for avoiding bias in the results. Another measure we have done to achieve credibility is that we presented the respondents with their statements and the context they would be used in. This was done to give the respondents the possibility to comment or explain the meaning behind the statement to ensure that our interpretation was right.

To achieve *transferability*, we have tried to present the findings in a detailed manner so that other researchers can judge the findings and determine if and how they can be transferred into other contexts.

To achieve *dependability*, we have tried to give a good description of the methodological choices we made, and the basis for why these choices were made. This is done through the research approach and should give other researchers information about how this research was conducted so that they can achieve the same methodological approach.

To achieve *confirmability*, we tried to make as much data available as possible. This has been restricted to some degree, as we have had to balance how much data we can present without identifying the respondents. The process of how we have transformed raw data into results is described, and we have to the best of our abilities tried to base the results on the context of this study.

4.4 Ethical considerations

It is important to treat everyone involved in the research honestly and fairly (Oates, 2006, p. 54). The participants trust us researchers with information, and this can if misused, be harmful to themselves or their organization (Miles and Huberman 1994, p. 288). We have, therefore, to our best of knowledge, tried to follow recognized research ethical norms and guidelines, both within our discipline and general guidelines at the university. This has been done by, among other things following the guidelines provided by the Norwegian Center for Research Data (NSD) and the ethical guidelines provided by UiA. This includes informing the subject about their rights as respondents; their right to not participate, their right to withdraw, their right to give informed consent, their right to anonymity, and their right to confidentiality (Oates, 2006, p. 56). We have also followed the guidelines provided by UiA and these are characterized by four basis values (Universitetet i Agder, n.d.)

1. **Transparency:** Transparency is the basic prerequisite for the development and dissemination of knowledge. Therefore, no aspect of the research should be consciously keep hidden from others, except in cases where there are good and widely accepted reasons for confidentiality.
2. **Professionalism:** High professionalism is a central pillar of the institution's ethics. It is the basis for a central ethical concept such as responsibility, trust, and respect. Research, like all interpersonal interactions, is based on trust and professionalism is essential for trust in the institution.
3. **Responsibility:** All research has a responsibility to ensure that the knowledge that is accessed is not misused and benefits society.
4. **Respect:** Everyone involved in and affected by research work is entitled to respect from others. Every employee should have respect for their colleagues' research work, both in their field and in areas unfamiliar to them.

All of the steps we followed were done to ensure that we were ethical researchers and to make sure that the subjects knew that all the information they provided us with, would be processed according to appropriate professional code of conduct (Oates 2006, p.60).

The respondents have Norwegian as their first language, and the interviews were therefore conducted in Norwegian. We decided to write this study in English, as this is the most used language in the research field. As all of the collected data from the interviews are in Norwegian, we have had to translate the statements used in this study. While we have tried our best to maintain the meaning and intentions of the statement, we also acknowledge that some nuance may have been lost.

To protect the respondents' right to be anonymous, we have chosen to alter some of the statements if the statement contained anything that made it possible to identify the respondent. This could be that the statement contained information about their gender or their position at the higher education institution. We have also in this process, tried to our best of knowledge to not alter the meaning or intention of the statement in any way.

Our relationship with MOSO has also been an ethical consideration that we have had to deal with, as we both are employees of MOSO AS and work with the technology on a daily basis. We have also had interactions with many of the organization customers, and some of these have participated as respondents in this study. Our involvement with MOSO combined with the role as researchers has been a challenge that we have had to evaluate. We have had to consider how to be objective and not have any bias to the findings. Another perspective is that some of the respondents know us as employees at MOSO and therefore could have held back information or not expressing their opinions to the full. To manage these challenges, we have been upfront with the respondents about our connection to MOSO and asked follow up questions to dig deeper into the topics.

5.0 Results

In this chapter, we will be presenting the results of our study. Our results are based on information gathered from 9 interviews that were conducted in spring of 2020. We will first start by presenting how the higher education institutions have implemented MOSO, how much usage there is, and what their further plans are. After presenting some background information, we will be grouping each institution under Kotter's eight steps for leading change and presenting the challenges they have experienced.

5.1 Higher education institutions

5.1.1 University of Agder

University of Agder was one of the first universities to test out MOSO as a collaborative project with researchers from UiA and UiT. The University of Agder is unique in this case as they have implemented it for both teacher education and kindergarten teachers. The implementation strategies were executed differently by different people for teacher education and kindergarten teacher education.

The department of teacher education at University of Agder started small with only five supervisors which was extended to 10 supervisors. After the trial period, it was opened up for anyone that wanted to use the software. There was a lot of interest at the start, but the interest started to decrease after a while as there was a lack of someone being in charge following up on the users and keeping MOSO relevant. The department for teacher education has also struggled with moving too fast with opening up for everyone leading to the professors feeling overlooked and forced to comply with the requirement of using MOSO. These professors teach the classes students attend, and if they are unhappy with MOSO it reflects onto the students and shows a lack of anchoring in the choice of software. The department of teacher education has employed teachers at different schools in a part-time position to be a resource for students and supervisors with technical issues or questions and assist with courses for the users.

The implementation strategy for kindergarten teacher training has been executed differently. They decided to implement it after hearing about how MOSO was used in the teacher education program and decided that it was something they had to be a part of. They started with three kindergartens and three supervisors with students in the first grade as a pilot project. MOSO has not been fully implemented yet, but there are plans to gradually increase the usage of MOSO in kindergarten teacher training.

When starting the pilot project, they created a project group consisting of teachers, supervisors, MOSO AS employees and employees from kindergarten teacher training that have worked together since the start on how MOSO should be implemented and used. The people involved in this project were carefully selected to ensure a successful implementation. First graders were informed that using MOSO is expected just like it is expected that they use

a computer and other systems that the university provides, and as they otherwise have little experience in other systems, it is easier to get them to use MOSO.

The leader for this project mentioned that the reason this project has gone well is because they have involved the project group and stakeholders from the start, and worked to keep MOSO a hot topic, and not just letting it run its own course and slowly die out.

5.1.2 The Arctic University of Norway

The Arctic University of Norway (UiT) was one of the first to implement MOSO while it was still in an Alpha version, which is why they decided to select a small sample size to test it at the start. With the software being in Alpha, there were naturally a lot of issues that lead to a negative attitude amongst the users, especially students and supervisors that were using it daily and losing their work as the software would often freeze or crash. The users would often comment that the software was disrupting them instead of being helpful. Regardless of the negative experiences the first time, they decided to double the number of testers for the next semester. MOSO had fixed a lot of the issues that users were experiencing, which made the experience much better for everyone involved, which was reflected in the surveys conducted by the institution. The institution was satisfied with the sample size at the start and how it was increased each semester. They justified it by saying that negativity spreads fast, and it would have been challenging to implement MOSO if the issues at the start affected more users. MOSO being in an Alpha phase was also mentioned by UiT as a benefit as feedback from students and supervisors influenced the software which leads to positive users. The schools selected for this project were a part of something called “university schools” that have a partnership with UiT and are first to test out new technology. For the first supervisors, it was entirely up to them if they wanted to use MOSO or not, and many of them were interested as they had been involved in the study “*Tablets as a digital tool in supervision of student teachers’ practical training*” and wanted to see how technology could be used to improve practicum supervision. The supervisors participating were also paired up with other teachers from the same school to share ideas and help each other with problems.

Training students on how to use MOSO has been important for UiT to get the most out of the software. They dedicated time for students and supervisors by setting up courses for students and visiting the schools to show the supervisors how to use the technology.

MOSO was recently presented to UiT’s “Digitaliseringsrådet” who were interested in the project and wanted to look into extending it to other study programs that also use practicum supervision in their studies, like nurses.

5.1.3 Oslo Metropolitan University

Oslo Metropolitan University (OsloMet) implemented MOSO in their practicum training department in 2018. They used MOSO for one school year before terminating the contract. During this year, one class consisting of 25 students was chosen to test out MOSO for 50 days over two semesters. The Oslo Metropolitan University differs from most of the other higher education institutions in this research as they tested out MOSO on practical teacher training students and not on teacher training students.

OsloMet is always looking for digital solutions as they have students all over the country, which is why MOSO was introduced to OsloMet as a research project. Initially, the plan was to implement it for multiple classes. However, there was a change in who was responsible for the implementation relatively late in the semester which affected the implementation. These changes resulted in a new person taking ownership of the project, only one class being able to participate and limited time to give out information about the project and training for both students and supervisors.

One of the main differences with practical teacher training students at OsloMet is that these students do not work in groups but are alone in their supervision and only interact with their supervisor for feedback, instead of other students. Because of this, all the work with observing and giving feedback was given to the supervisors who were not always digitally inclined. OsloMet therefore made it voluntary and entirely up to the students or supervisors if they wanted to use it in practicum supervision or not. As this was voluntary the number of students and supervisors using MOSO gradually dropped. OsloMet's reasoning was that MOSO was perceived as extra work by supervisors and students instead of being an aid in their practicum supervision.

5.1.4 Western Norway University of Applied Sciences

The Western Norway University of Applied Sciences implemented MOSO in 2018. They first heard about the technology at a conference where MOSO was presented.

When MOSO was implemented, all 400 practical teacher training students were offered the opportunity to use MOSO. HVL chose MOSO as that was the tool that could help them with the situation they were in as their students are spread out over a large geographic area. Following up on students was time-consuming and expensive with all the traveling which made it hard for the institutions to give a good assessment on the student's practicum.

According to our respondent, the implementation process has been cumbersome as there is a lack of involvement from the professors on campus. The respondent mentioned that this might be because they are not used to actively participating in the student's supervision when they are away from campus. Before starting the practicum period, students and supervisors get an introduction on how to use MOSO, which from their experience has worked well as the technology is easy to understand. What has been more challenging is for the students to learn how to observe, give and receive feedback.

The program director for teacher education has had the responsibility of implementing MOSO. Until now, HVL has used a voluntary strategy, but from next semester they plan on making it mandatory for seven of their partner schools and voluntary for other schools that want to use MOSO in practicum supervision. HVL has set up a two-day long conference this fall to gather headmasters, teachers and supervisors where they will discuss more in-depth about implementation strategies and how to ensure that MOSO is implemented correctly and not just something in the background that is rarely used.

Implementing MOSO has been challenging, not because the technology is hard to implement, but because practicum supervision is value-laden and a touchy subject for teachers, and implementing MOSO touches a lot of areas outside of the application.

5.1.5 Volda University College

Volda University College started using MOSO as a pilot project in fall 2017 and spring 2018 with a few students and supervisors. This happened after the program director for teacher education was at a conference where MOSO was presented. A few students and supervisors were asked if they wanted to participate in the project and if they were interested in using technology for supervision. The feedback from these participants was very positive which is why they decided to roll out MOSO for all students starting in 1st grade. As of now, MOSO is mandatory for all students in 1st and 2nd grade which includes about 220 students, and one more grade is added each year to increase the number of users. Unlike other institutions, HiVolda made it mandatory from the start and expected that all students and supervisors involved used the technology in supervision.

The main responsibility for implementing MOSO lies with the program director, but has been delegated to an advisor in the department for teacher education and a supervisor that has been employed at the university to work with implementing MOSO, following up on students and other supervisors, holding courses and being a contact point for technical issues.

There has been mixed feedback from students and supervisors after MOSO was rolled out for everyone. Students have been positive to having everything related to supervision gathered in one place, but give negative feedback if they experience technical issues, which can happen often as the software is in a beta version. Some supervisors that were reluctant to use MOSO at first have gone from not wanting to use it to being very positive and can't imagine going back to supervision without MOSO. There are still a few supervisors that refuse to use the software which makes it hard for the students to use MOSO as well.

Volda University College tries to keep MOSO relevant with courses at the start of the semester and talking about it in meetings as there are always new students and supervisors that will use the platform, and by keeping it a hot topic MOSO is not forgotten.

5.2 Change management

5.2.1 Create Urgency

Creating urgency was a point mentioned by 6 out of 9 respondents.

There is an expectation from the Norwegian government that the higher education sector should look after digital opportunities and ways to become more efficient. Some of the institutions have used this demand as a way of creating a form of urgency and motivation for implementing different types of technology.

“This is probably due to the fact that the government's report on higher education has a demand that higher education should be more digitalized, so they actually have an expectation that the institution are looking at new opportunities” (Respondent ID1).

Most of the institutions have had an incremental and voluntary approach to implementing MOSO. It has been up to the individual teacher and supervisor if they want to use the software and to the degree to which they use it. The respondents' general feedback is that they think this voluntary approach may have prevented the institutions from creating a better form of urgency. When the choice of using something is voluntary and entirely up to the individual, there is no external motivation.

“I have no doubt, I think they should have had a completely different approach, [...]. I wish they had invested a little harder and said that this is the tool we use” (Respondent ID2).

There have been some institutions that have chosen a stricter approach, where they early in the process expressed that MOSO is a tool they want to use, and there are no exceptions to this. Respondent ID4 expressed that their institution could not afford not to join the digitalization of the practicum field and it was therefore important that they had to be proactive and try MOSO, even though they did not know how well the technology would fit their processes.

“It was not really voluntary. We told everyone, if you are going to attend the teacher education here, then it is the same as having to use a PC or using our other systems and programs. MOSO is a program that we use” (Respondent ID4).

MOSO has been introduced to institutions by different people. These have had different roles within the institution, which can impact how well they have managed to create a form of urgency. There is a difference in who introduces the technology, and it can be harder for a supervisor to get support than for a practicum leader or a professor.

The institutions have accomplished a form for urgency, and this has been done in different ways and to varying degrees. There is a need for more digitalization, and some institutions have used this demand when implementing MOSO. Respondent ID1 expressed that “When 2-

3 big institutions use MOSO, others will think that this is something we also need to try". So, even though the institutions do not compete in a typical setting, another motivating factor is that other institutions use MOSO, and therefore we must use it too.

5.2.2 Create a powerful coalition

Creating a powerful coalition was a point mentioned by 8 out of 9 respondents.

Almost all respondents recognized that an implementation project has to have the right people involved because this can determine the success or failure of an implementation project. The project team should consist of people that are motivated, take ownership, and have the required skills and authority.

"I think you have to have someone who has a very clear responsibility to keep at it and who can follow up [the implementation] in the starting phase" (Respondent ID2).

However, the person who takes responsibility and ownership over the implementation has to be someone with the right set of skills and have the right authority within the organization. Two respondents expressed that even though they were very encouraging to the change, they were not in a position where they had the authority to embrace these changes.

"I don't think I had any impact on the academic environment. I just came as a teacher and told them how to do it, and there are some who are provoked by this" (Respondent ID2).

"And then it becomes a bit like who am I to say this, what mandate does an employee have to be able to say anything to a college lecturer or an associate or whoever is in charge of the practicum?" (Respondent ID5).

The education departments rely on having supervisors in different schools so that the students can be observed and evaluated in a real-life situation. This relationship is crucial for the existence of practicum and gives the supervisor some degree of power as they are a scarce resource that higher education institutions depend on. Respondent ID6 expresses that a practicum consists of the three roles: student, supervisor, and teacher, and it is therefore important that all these are included in the implementation process.

"It [the practicum] is a collaboration between students, teachers and supervisors. So, these are the three main players in the partnership" (Respondent ID4).

It is especially vital to involve all three roles in the case of implementing MOSO as this technology touches a field that is very personal and with a lot of emotions. Practicum follows a lot of traditional processes, and many supervisors and professors have been involved with this for many years. They have developed specific procedures that they believe work the best. Having them on board from day one can remove much uncertainty regarding what the

technology is and how to best implement it without interrupting the traditions surrounding the practicums.

“We see that MOSO arouses a lot of feelings in people, and I think this is a complex setting and my impression is that they do not understand what it is. They have a thought and a misunderstanding of what it is, and these [misunderstandings] are able to live very long” (Respondent ID2).

Involving the right people is a recurring topic that is brought up by the interviewees on multiple occasions. The implementation and use of MOSO is dependent on how well the teachers and supervisors embrace the technology, and it is clear that a lot of teachers have not been included enough. *“We see that the missing element is that our professional teachers are not involved in MOSO”* (Respondent ID8).

5.2.3 Create a vision for change

Creating a vision for change was a point mentioned by 7 out of 9 respondents.

Presenting a vision effectively and in a way so that the other stakeholders can easily understand the reasons for implementing MOSO was mentioned as something the different institutions could have done better. It was mentioned by the respondents that introducing MOSO and giving a good and comprehensive description of what the program is and thus also implying what it is not was something they should have prioritized more. A lot of the resistance to MOSO was based on stakeholders misunderstanding the application and its functions. There has, therefore, been a need to explain that MOSO is a tool used to connect the different stakeholders within a practicum better. This includes the school where the supervisors work and the campus where the teacher works. These are in reality, two sides of the student's overall competence development (Respondent ID8), and it is necessary to develop a plan for how MOSO will be used to connect these better.

“So, it was a little difficult to handle change in such a short time. So, I think that if you are to implement and use something like that, then it is important to have good information and clear guidelines right from the start. So, everyone knows what they're going to use” (Respondent ID6).

In the data collected, we found that most higher education institutions have not developed a well-defined strategy or vision for the implementation of MOSO. The respondents explained that the implementation had been a bit unsystematic and that it was a bit random which practicum groups had the possibility to use MOSO. At the majority of the higher education institutions, the decision to use MOSO was given to the supervisor and teachers. There were several reasons for this, but the most common was that they could not pressure them too much, as the practicum program is very dependent on them. This raises the question, “who is actually motivated to use MOSO?” (Respondent ID2). The supervisors can argue that using

MOSO only will give them more work, and this is often something people in an already busy work situation don't prefer.

“It is up to the individual supervisor whether they use the tool or not. Then you can take it even further and ask the question of who is motivated to achieve that quality enhancement? Is it the university, the students, the supervisors or who is it? There will be extra work for supervisors, so they may just want to continue as they have done, because it has been safe and easy. This can be a challenge” (Respondent ID2).

There have been some institutions that have created what they call a project group. This group consisted of professors, students, supervisors and MOSO AS employees and had the task of planning how to implement and use MOSO. The respondents who have done this explained how they got valuable information from all stakeholders on their view on the application and what challenges they think MOSO will bring.

5.2.4 Communicate the vision

Communicating the vision was a point mentioned by 7 out of 9 respondents.

There has been a lot of misunderstanding over what MOSO is, and to some degree, why there is a need for the technology. The respondents' general feedback is that there has been an under-communication of MOSO's benefits and how the technology can be a value for the practicum field. There is an agreement between the respondents that using more time trying to align the stakeholders and get everybody to understand the technology, and how MOSO can be beneficial to the practicum field.

“Sometimes, I think we could have been even clearer and better at explaining what MOSO is. What can it be used for? Now we have had one hour in a practicum improvement meeting. Should we have had half a day, should we have held a workshop, a little more of students meeting other students? Or practicum supervisors meeting other supervisors?” (Respondent ID4).

Even though the higher education institutions have tried to involve all stakeholders and communicate their vision, there have been some challenges with reaching out to the different stakeholders, especially the supervisors and teachers. It is a common theme that the institutions provide courses, workshops, and other forms of training to both the students and supervisors. In multiple cases, there has been a lack of involvement in these training sessions, and one specific occasion mentioned was that an institution invited supervisors for a web-based training course before the practicum started, and only one supervisor joined the lesson (Respondent ID7)

“The challenges have been to reach them [supervisor and teachers], because we have set up training courses, but very few show up” (Respondent ID2).

An application can be used in many different ways, and this applies to MOSO as well. So, it has been important to communicate that MOSO itself does not increase the quality of the practicum, but how they use the application (Respondent ID2). The practicum field consists of different activities, and when introducing MOSO, these activities are documented in greater detail and are therefore more visible. Communicating how MOSO will change some aspects of the practicum and prepare the users on these changes has been important for most of the institutions. Practicum can be a stressful period for both the student and supervisor and some respondents therefore think that it is important to introduce MOSO at the campus before the practicum starts. In multiple cases, the responsibility for introducing the application has been given to the supervisors and the students have therefore not been introduced to MOSO before the practicum starts.

“The practicum period is hectic, and that the students get a good training in the software before they go out, [...]. I think that is an important part of the implementation. Students have to become familiar with the tool before practicum supervision” (Respondent ID2).

Some institutions have extended the work task of a supervisor or professor to include working with the implementation of MOSO. Their main responsibilities have been to follow up on students and other supervisors and to hold courses. The general feedback from this is that having someone specific to communicate how the implementation process will be has been very beneficial.

5.2.5 Remove obstacles

Removing obstacles was a point mentioned by 8 out of 9 respondents.

The higher education institutions have encountered a lot of different obstacles when implementing MOSO. Getting support from all stakeholders is the most mentioned obstacle from the respondents. *“The main challenge has been to get teachers involved with MOSO”* (Respondent ID7). Involving the professors in the implementation can be difficult as they often already have a busy everyday life. If they did not see the benefits of MOSO early in the implementation process, it was more likely that they would avoid the product later in the process.

MOSO is a tool used for practicum supervision, but it is also a research project. This means that even though the software is in use, there is still ongoing research trying to document the value and benefits of using a tool like MOSO in practicum programs (Respondent ID2). However, because MOSO has originated from the research field, there have been some challenges within the academic community as capitalizing on research findings is in some communities, relatively new and not yet fully accepted (Respondent ID9). However, some respondents feel that because MOSO is based on research, this strengthens and supports the application (Respondent ID7).

“He [the founder] is both a researcher, but also one who can potentially make money. So, some are probably skeptical because of this” (Respondent ID2).

A common challenge is that there is a resistance against mobile telephones when the students are out at a school conducting their practicum period. Mobile usage in a school context has been something the supervisors have tried to avoid. There is an impression that this could make the students unconcentrated and result in unsatisfactory observations and affect the overall practicum.

“They [supervisors and teachers] were also skeptical that the observation would be different and that the students would sit with their cell phones in the classroom” (Respondent ID7).

Most of the respondents are affiliated to the teacher education field, and most of them have practicum programs where the students are observed in a classroom full of children. This raised many questions about how MOSO handles privacy issues as the product provides the possibility to take pictures and videos and upload these into a feed. Another challenge that emerged was that some of the supervisors were skeptical of the idea of taking pictures and videos as they did not see the value this could give the supervision.

“[...] some are very concerned about privacy and fear the consequences, and fear that there will be more distance in the guidance process and that the benefits [from using MOSO] do not outweigh the negative sides” (Respondent ID1).

There have been technical issues with MOSO, which is understandable as most institutions used a beta version of the software. This has been a frustration for a lot of users and in some cases resulted in users not wanting to use the application (Respondent ID7).

5.2.6 Create short-term wins

Creating short-term wins was a point mentioned by 5 out of 9 respondents.

Some of the institutions have implemented MOSO as a pilot project where the software was not fully developed, and the institutions were part of the development phase. This cooperation between the institutions and MOSO AS has made it possible for the end-users to recommend changes to the software. Many of the changes have been implemented, and this has given the users a form of a win. They can see that their opinions and input has been valued and experienced the changes when using the application.

“I definitely think it's been nice to be a part of the pilot project. This is especially evident for the supervisors and students. They see that the things they have come up with and want for improvement have come. For them they are very positive. And this is gold to us in a way to spread the positive about MOSO, because we depend on positive messages from users in order for this to live on” (Respondent ID5).

There is a trend among the institutions to implement MOSO with an incremental approach. The respondents explained that one of the reasons for choosing this is to get small wins and use these wins to motivate the other stakeholders. The institutions want the pressure to use MOSO to come from the students, supervisors, and teachers, not from higher up in the management. The reasoning behind this was that they believe the end-users should see the benefits of the program and want to use it rather than it coming from the management as a program they have to use.

“I think it was a success factor [starting with few users], because it is something completely different when there are supervisors who talk about how well this works, instead of us doing it [administrator], or someone from MOSO doing it” (Respondent ID7).

The general feedback from the respondents is that it is essential to create small wins and that this is extra important when dealing with an unfinished product. It can be demotivating to use a product that occasionally loses your data or does not work at all. Valuing the things that work and seeing that the developers value the end-users’ feedback can be very motivating and help spread positivity about MOSO within the institution.

5.2.7 Declaring victory too soon

Declaring victory too soon was a point mentioned by 3 out of 9 respondents.

Most of the institutions have had an incremental approach to the implementation of MOSO, where they started with only a few students and supervisors. Some of these institutions have gradually opened up for more users, but others have opened up for everybody that wants to use the application. This has, in some cases resulted in a loss of control over who uses it and how they use it. There have also been occurrences where the institutions no longer follow up on the users after they give everybody access to the program.

“It might have been wise at that stage to limit it a bit. What happened was that when we started to open [up for other classes], we decided to open for one specific class. But then it happened that “we also want to” and we opened for another class. [...] But these classes were not followed up in any way” (Respondent ID2).

Some of the respondents had expressed that it is very good that there is a desire to use MOSO, but it is important that the users are followed up so that the institutions can see how the users have utilized the application and if there are any challenges that occur.

5.2.8 Anchor the changes in corporate culture

Anchoring the changes in corporate culture was a point mentioned by 8 out of 9 respondents.

The general feedback from the respondents is that the focus on culture change has not been good enough. The implementation process has been a bit random, and there has been an absence of clear leadership and ownership of the changes that have been implemented (Respondent ID3).

“It is a challenge that it is not decided on the administrative level that we will use MOSO. We have just kind of quietly and calmly started to use it. It has been used by some, and then others have joined” (Respondent ID3).

MOSO is a tool used in practicum, and because students and supervisors only have a prefix number of practicum days, and the fact that it has been voluntary to use MOSO in many cases, the total usage of MOSO within a year is limited. Some students have used the tool in every practicum, but there have also been occasions where the students have used the program one semester, but then not used it for 1-2 semesters. The usage of MOSO has to some been unpredictable and not something that has been anchored in the organization. There are some exceptions to this, two institutions have tried to operationalize the use of MOSO and invested in resources to support and maintain the usage of MOSO.

“So, I think my role in this is to be the one who arranges and organizes the implementation, not be the one working directly with MOSO. I don’t think that is my business, but we will operationalize it, and make sure it is put to use” (Respondent ID4).

Some institutions have taken the measure of employing what they call a MOSO coordinator that has the responsibility of being the contact person between the different users, the department and MOSO AS (Respondent ID7). This is an organizational change they have implemented to strengthen MOSO’s position within the institution and communicate that this is a program that they want to use.

“He has been hired as a MOSO coordinator. I think that is perhaps the most important thing” (Respondent ID7).

In some cases, the implementation and use of MOSO has been totally dependent on one or two people and they have had the full responsibility of how MOSO would be implemented. Respondent ID9 elaborated that without anchoring the change within the administration, the project can be a *“one-man show and this will unusually lead to success”*.

6.0 Discussion

This chapter discusses the results of the data collection against relevant literature, with the intention to answer the research questions presented in the introduction. The discussion chapter is divided into six main categories that we find sensible to discuss. In the first category, we discuss the decision of choosing MOSO, and the factors that influenced the choice. In the second category, we discuss the introduction of MOSO and how the different higher education institutions have created and communicated a vision for change. In the third category, we discuss the training of MOSO, and what measures the higher education institutions have implemented to remove obstacles and ensure correct use of the technology. In the fourth category, we discuss how higher education institutions have anchored the change. In the last chapter, we discuss some of the limitations of this research study.

6.1 The decision to use MOSO

The Norwegian government has issued a whitepaper where they express the need for more digitalization within higher education (Kunnskapsdepartementet, 2016). There have been many digitalization projects within the teacher education, but according to Respondent ID8, they have been much slower than the rest of the higher education sector. This is partly because of the traditions they have, and to some degree, the fact that there is a reluctance to technology within teacher education (Respondent ID9). The respondents' feedback on this digital demand was that it had been used as a form of motivation for them to implement MOSO. The respondents also said that they are looking for different types of technology, but that it is important that they choose technology that will increase the quality (Respondent ID7).

The reasons and decision of choosing MOSO has been very similar for the various institutions we interviewed. The main factor in this has been one of the founders of MOSO who is a well-known researcher with multiple papers on technology as a tool in supervision and his presentations of MOSO at conferences for teacher education. The individuals that read these research articles and are present at the conferences can be anything from supervisors, university administration and digitalization advisors. These people often know the founder of MOSO personally or are aware of his research which can influence their decision in choosing MOSO as their platform. In addition to this, a few of our respondents mentioned that there is a big focus on digitalization at the moment, and it is vital for the institutions to focus on this area to see what benefits they can achieve.

From the interviews, we have discovered that two of the institutions that have been using MOSO since the start have influenced the other institutions by showing how a digital application can be used in supervision. Both of the institutions are universities with a large teacher education, and them using MOSO gives the product credibility and puts pressure on the other higher education institutions. Practicum supervision is an area that has been using a pen and paper approach since the start, which makes it an interesting area to digitalize. The

government has also expressed the need for more digitalization in higher education, so we see that the institutions are under pressure from multiple directions.

When students are in their practicum period they are placed out at schools in the districts. For some institutions, these schools can be located far away, and sometimes even in other cities. It is a requirement that teachers from the institution visit the student at least once to observe and check if everything is going as expected. For some institutions, this is not an issue, but if the schools are located far away, it can lead to a lot of time and resources spent on traveling. Respondents mentioned that they have more control of what is going on in a student's practicum period as they can see what is going on every day and feel less need to travel out to the schools to observe, which has been saving them time and resources that can be spent on other tasks.

6.2 The introduction of MOSO

Through the data collection, it has become obvious that a comprehensive and robust vision is essential for implementation. Respondent ID2 stated that their implementation had been a bit random and that there was no clear ownership over the implementation. This has been the general description from most of the respondents and in retrospective they think that they should have done more to create a better vision. However, some institutions have managed to develop a good vision for the implementation. These have created a form of project group consisting of people with the right authority and motivation. The group has also included stakeholders that will use the application daily. They have also created an implementation plan, that in a detailed manner, describes who gets to use MOSO and how they will expand the userbase from year to year. In retrospect, the respondents have realized that they should have included the stakeholders more in the early stages and that it is vital to have a project plan that describes how the application will be implemented.

The institutions that have included the different stakeholders in greater detail have managed to create a better vision and understanding of what MOSO is and why the application can be beneficial for the practicum field. The respondents state that there is a need for more digital innovation in the higher education sector, but there has been some resistance against this technology reform (Respondent ID9). A specific conflict of interest, which was often highlighted during our interviews, was that MOSO is an application that is based on research. Some of the respondents think that this is an excellent thing and that this only strengthens the quality of the application. There are, however, some stakeholders who have a different opinion on this. They do not approve of using a tool developed and commercialized by a researcher.

There is a need for more research on how a digital tool like MOSO can benefit the practicum field, is one argument we got from the interviews. The professors at the institutions do not want to use the application before someone can prove that it will increase the practicum quality. Respondent ID2 and Respondent ID4 disagreed with this statement and stated that there had been conducted multiple research papers in the last few years that document the

usage and benefits of including more digital tools in the practicum field. The respondents further explained that there have even been research articles directly related to how the use of MOSO in practicum can increase the overall supervision quality. The respondents that have experienced this conflict stated that this could have been avoided if the institutions had included the professors in an earlier stage and communicated better with the stakeholders.

Including the stakeholders early in the implementation phase can be an essential step as different challenges and misunderstandings can be found and eliminated as early as possible. One challenge identified was that MOSO makes supervision more transparent which could have been a factor that created a fear of being exposed for the supervisors (Khalil, 2013). Involving the stakeholders is vital when dealing with an environment that is very traditional as there are a lot of emotions in motion and practicum supervision is a vulnerable topic for many.

Forming a powerful coalition was one of the topics the respondents mentioned most. Respondent ID2 expressed that there has been a lack of ownership and someone taking responsibility for the implementation. This statement complied with many of the other respondents' views on this point. There have been cases where some individuals have taken ownership of the application and been enthusiastic about implementing MOSO. However, some of these individuals have lacked a form of authority within the institution, and it has, therefore, been hard for them to influence the other stakeholders.

The institutions that have managed to create a project team with the necessary people have expressed that this has been very beneficial for the implementation process. Respondent ID4 explained that when someone in the management takes ownership and makes a plan for how the implementation should be, the other stakeholders will accept the changes easier. It is also essential that the project group includes the stakeholders the changes will affect. According to Respondent ID4, they wanted to include teachers, supervisors and MOSO AS in the project group. This was done so that the group contained stakeholders with different points of view, and they could, therefore, get a better understanding of what challenges and concerns each group of stakeholders had. Including MOSO AS was done because the organization consists of people with adequate knowledge about the application, and how to utilize it. This confirms that a project group should include motivated people but also individuals that can create change within the institution.

Some institutions have mentioned that they want the motivation and push to use MOSO to come from the supervisors and students that will be using the platform in their practicum period. The reason mentioned for this is that students and supervisors will be more positive and motivated to use the system if they are the ones that requested to use the application instead of being forced to use it by the institution. Even though it is important for the push to come from the bottom, we noticed that a lack of drive from management can lead to the changes being made not getting anchored properly in the organization.

Most of the institutions we interviewed mentioned that an area they had not been successful in was involving the stakeholders, or not involving them early enough in the implementation process. This caused them issues later when trying to anchor the changes for the whole institution. The respondents that worked closely with the stakeholders and were aware of the importance of forming a powerful coalition and involving stakeholders in an implementation process did not experience these issues to some degree. Kanter (2012) discusses the importance of including the stakeholders as not doing this can lead to resistance against the change. From the interviews, it is therefore possible to see that the institutions that have managed to create project groups consisting of the right people have had fewer complications.

6.3 Implementation strategy

From the interviews, we discovered that there is a common trend amongst the institutions to implement MOSO with an incremental approach. The first few institutions that implemented MOSO were working with an unfinished pilot version that had a lot of issues. In addition to this, MOSO was the first digital tool used for supervision. Because of this, the number of users involved in the start of the implementation was kept small to avoid multiple users from experiencing issues and spreading negative feedback to other students and supervisors. As mentioned by Respondent ID5, negativity spreads fast, and it is vital to avoid negativity from users at the start of an implementation process. It was therefore decided to use the experiences from the first users to improve the application. This approach is mentioned by Hertzum (2002) as a good strategy because it reduces the scope of the implementation and gives the organization time to evaluate the implementation. As mentioned by Markus (1983), poor technology and immature systems can cause challenges when implementing change, and the institutions have tried to mitigate this risk by only including a few users and using time following up on them for a more successful implementation.

Six of the institutions have had a voluntary approach where it was up to the supervisors and teachers to determine if they wanted to use the application. The institutions explained that supervisors are a scarce resource, and it was essential for the institutions that implementation of MOSO did not lead to losing any supervisors. The practicum is very dependent on supervisors and a vital part of a practicum is supervisors observing students. Some of the institutions were, therefore, afraid that if they forced everyone to use MOSO, the ramifications of this could be very negative. There were some institutions that decided to implement MOSO with a stricter approach. These institutions made MOSO mandatory for the supervisors for a whole class and they expected that everybody used MOSO. Having a voluntary approach was mentioned as a safer approach, as they have been scared of losing their supervisors. But we can see from institutions that have had a stricter approach that very few supervisors were lost, and surprisingly they managed to attract new supervisors that wanted to take part in the new technology.

Most of the institutions started off with a small number of licenses to MOSO while pilot testing the software and were therefore limited to how many users they could include at the start, which is why an incremental approach was appropriate. Respondent ID1 mentioned that

economic circumstances could have affected how many licenses the institutions were able to purchase. This is interesting as there is pressure from the government to focus on digitalization in higher education and funding should not be a limiting factor. Another limiting factor was the fact that institutions are dependent on supervisors as there is a lack of supervisors and they were afraid of losing them, so they were only able to include the supervisors that volunteered.

Two of the institutions decided to use a stricter approach that can be compared to the big bang approach. From our observations, the reasoning for going for a stricter approach could be that MOSO had worked out its issues and was relatively bug-free. According to Hertzum (2002), one of the challenges with a big-bang approach is that a lot of people will be affected by any issues that occur. The institutions that have selected a big-bang approach came in later in the MOSO development, either intentionally or unintentionally. However, this made it possible for them to start off with a larger userbase than other institutions. Additionally, the institutions that came later had the possibility to work together with other institutions and learn from them as the other institutions had already been in a pilot phase earlier. This could have contributed to them being better equipped.

Equally, the institutions that have used a stricter approach have involved a project group that has had the responsibility for the implementation. Due to this, there has been less resistance for implementation and for them to make it mandatory for users to use the system which at the same time creates a form of urgency to use MOSO.

6.4 The training of MOSO

The main reason for implementing MOSO is that there is a belief that the application can improve the quality of practicum supervision. However, as Respondent ID2 mentioned, the technology itself does not increase the quality, it is how they use the application. The technical usage of MOSO has, according to the interviews, not been a big challenge. The users have had a different technical understanding, and the students generally understand the functionality without problems while the professors and supervisors have less experience using technology and run into some technical issues. Overall the challenge has been to use the application correctly. The institutions have different ways of conducting practicum, and there is, therefore, no single solution to how to use MOSO. The institutions have organized courses, workshops, and other training sessions where the goal has been to ensure that the users understand MOSO and learn how to use the application.

Interestingly we have discovered that most of the basic introduction and training of MOSO is done out on the practicum school and by the supervisors. This is interesting as we thought that the training would be done at the campus and by the professors so that students would be prepared when they came out to schools to teach and have one less thing to worry about. For the students, the practicum period can be stressful, which is why they can experience MOSO as more of an obstacle than a tool to help them learn more. We have seen from the interviews that the institutions have made efforts to hold courses but there have been few to none that

attend, which makes it hard for the institutions to get the students to know MOSO before the practicum period. Some institutions, however, have struggled with time and planning and only managed to provide links to videos and information as an introduction to MOSO before the students start their practicum period.

A few of the institutions have employed supervisors at different schools in a part-time position to be a resource for other supervisors and students when they experience problems. These supervisors have meetings and training with the institution to be able to help the users fast, as the institutions have feared they might lose supervisors if they experience problems and are left alone. Respondent ID6 put it very clearly “*There are always challenges when implementing new technology*”. We can see that most of the institutions, as mentioned by Kotter (1995), are trying to remove obstacles and challenges for students and supervisors by providing access to training and resources to ensure that the implementation goes smoothly.

6.5 The anchoring of MOSO

Anchoring the application into the institution's culture is essential because, without this, the change is subject to degradation as soon as the pressure is removed (Kotter, 1995). The feedback from the interviews is that it is hard to anchor MOSO when the application is not decided on an administrative level. In some cases, the implementation of MOSO has been implemented on a small scale without the management's full support. In these cases, it is hard to reinforce the changes, and the usage of MOSO is highly dependent on individuals' motivation to use the application. Respondent ID7 explains that no directive or demand makes the use of MOSO mandatory, and it is, therefore, up to the professors or supervisors to use the application. When the usage of MOSO is dependent on single individuals, the institution will have a challenge if these individuals lose interest in MOSO.

Respondent ID8 compared the implementation of MOSO to other technologies they have implemented at the institution. The respondent has been involved in multiple implementation processes and explained that these products had a much stronger position within the institutions because the management introduced the technology. The technologies were mandatory for the employees at the institution, and it is therefore “*just a thing we used*” (Respondent ID8). The respondent further stated that when the technology has support from the institution, nobody complains or second-guesses the technology.

MOSO is not an application that is used throughout a whole semester, the usage depends on there being practicums, and some institutions only have one practicum per semester. This means that there will be periods each year, where the usage of the application is low. It is, therefore, important that the institutions try to keep MOSO relevant between these practicum periods. The respondents that have chosen a voluntary approach also confirm that it is vital to keep MOSO relevant even in the periods where they do not use the application. They explained that because there is a choice to use MOSO, it is crucial that the users are informed on changes to the application and other relevant information. This has been extra important in the case of MOSO, because the application was still in development and there could be many

changes each time they used MOSO. Informing the users about these improvements could determine if they wanted to use the application or not.

From the interviews, it is possible to recognize that the institutions that have followed the seven first steps of Kotter's change management model would have a better chance of anchoring the change. With this, we mean that the institutions that have managed to form a powerful coalition and use the project group to create a vision for change have mitigated or avoided a lot of the common challenges.

6.6 Limitations

We are aware that this research has been conducted by two inexperienced master students who would not be able to carry out a study of the same quality as a well-experienced researcher. This research has been conducted in a set time limit of one semester. We have been so unfortunate to conduct this research in the middle of the COVID 19 pandemic. This has, to some degree, affected the research as we are two students collaborating on this study, and we were forced to do this over the Internet. We could, therefore, not discuss or write the study together in person. This research focuses on the higher education sector, and they have been severely affected by the pandemic. Some of our planned interviews were, therefore, postponed or canceled. We still believe that our sample size is big enough to understand the questions this study has researched.

The data collection of this research is based on nine interviews. We interviewed employees from different higher education institutions and from MOSO AS. The people interviewed had different roles within the institutions, from supervisors to program directors. We could have chosen respondents with the same position at different institutions. However, this is also not that easy as the education sector is complex, and they do not always follow a direct line of command. Sometimes, the implementation was initiated by supervisors, and in other cases, it was decided by the management.

We have experienced that conducting interviews is hard. How many interviews are enough? How will the interviews be conducted, and how detailed should the interview guide be? In retrospect, we think our paper would have benefitted from including multiple respondents from each institution. We tried this at one institution and noticed that the responses were more detailed when combined. We have also experienced that conducting semi-structured interviews is a process that consists of so much more than just asking several individuals a set of identical questions and then letting them speak freely. We could have tried to take more control when conducting the interviews and steer the interview objects towards the themes. We could have made the interview guide more detailed and done a better job making sure that the respondents could not misinterpret the question. However, we do not feel like this has affected the research that much

We both work for MOSO AS as technical developers, and this may have impacted the findings of this research. Throughout the study, we have tried to separate our roles and be

open about this conflict of interest. However, the interview objects can have avoided bringing up certain aspects because of our role at MOSO AS. It is, therefore, a possibility that our role has consciously or unconsciously influenced the data collection in this research.

7.0 Conclusion and implications

In this chapter, we will be answering our research questions, what implications our study has for higher education institutions, research field and areas for further research. The purpose of the study was to describe the implementation strategies higher education institutions used and find the challenges they experienced when implementing a new system.

To answer these questions, we conducted an exploratory, qualitative study where we interviewed people from Norwegian universities, university colleges, and individuals affiliated with MOSO AS. All of the respondents have been involved with the implementation process in some form.

7.1 Conclusion

The higher education sector is a large and complex sector with many people involved. They do not always follow a traditional organizational structure, and the structure differs from institution to institution. Many people have strong opinions about how education should be, and we have observed that these individuals can have a big impact on how new technology is perceived.

RQ1: What implementation strategies do public higher education institutions use when implementing MOSO?

In this study, we have investigated how different higher education institutions have implemented a digital platform for practicum supervision through qualitative interviews. From what we have seen, most of the institutions went with an incremental approach when implementing this technology. We have observed that there can be multiple reasons for choosing this approach. First of all, MOSO is an entirely new way of how practicum supervision is completed and is based on one research paper. This could be a reason for the institutions not wanting to go all out and instead choose a more incremental approach and evaluate if they see any benefits or not. MOSO is also still in development and can still be considered unfinished software, which means that a full rollout can impact a lot of users if there are any errors. Due to this, many of the institutions instead chose a more incremental approach with a few users that they could follow up on and receive feedback from to see if the software is something they should implement for more users. Institutions that came in a bit later in MOSO's development chose a stricter approach with a lot more users. This can be due to a variety of factors. First of all, it is possible that they chose a more strict approach as they had seen the value of MOSO from other institutions' implementation of MOSO, or that they learned from other institutions' experiences on how an implementation process should be done and managed to avoid common pitfalls.

RQ2: What are the challenges the higher education institutions have encountered when implementing MOSO?

In this study, we have also looked at what challenges higher education institutions face when implementing MOSO. The different challenges discovered are presented in Chapter 5 Results. We have used the change management model presented by Kotter (1995) to categorize the challenges presented by the respondents.

Our observation is that the main challenges have been to involve all the stakeholders and communicate the change. It has been an important topic for the institutions to manage to include the right people in the implementation process from an early stage. A lot of institutions struggled with this which made it harder for them to get the platform anchored in the different communities. It is also important to include the right people that have authority and can have an impact on the implementation.

Another challenge for the institutions was to create a vision for change and communicating that vision to the stakeholders. The higher education sector is complex and includes many individuals, and some of these are experts in their fields with their own opinions. The complexity of the higher education sector can make it challenging to create and communicate the vision as there are many different opinions. By not having a good vision and a plan for change, a lot of stakeholders involved misunderstood why a change was needed and the benefits it would have. This could also be due to not using the correct communication channels to reach the stakeholders. Another challenge that occurs when there is a lack of a good vision and plan is that it becomes hard for the institutions to keep the implementation relevant and active.

Anchoring the changes in the organization is also an essential aspect of implementation and a big challenge. We observed that it is important to have individuals that take the lead for the implementation, but without anchoring the changes in the organization, it becomes challenging to keep the changes relevant and be long-lasting.

This goal of this research has not been to conclude on what practices are best or present a list of the top challenges that can occur in an implementing project. Instead, this is a descriptive study where we have tried to present how different higher education institutions have conducted an implementation process and which challenges they have faced. The reasoning for conducting this form of research is to try and create a foundation of information.

7.2 Implications

Digitalization is a topic that is very relevant in our ever-growing digital society. Almost all entities are affected by digitalization and there has been a lot of research on digitalization in recent years. In this report, we have looked at digitalization in higher education and practicum supervision. More specifically, we have looked at implementation strategies and change management when it comes to digitalization projects. With this as a starting point, our study

can be of interest for universities and university colleges that want to implement new technology or are interested in implementing MOSO. The study can also be interesting for companies that develop software for the higher education sector and want to avoid common pitfalls when it comes to implementing and advising customers.

In this embedded case-study, we have looked at different implementation strategies used by higher education institutions when implementing the software MOSO, developed by MOSO AS. When it comes to the implementation process we discovered a few areas that are important to focus on to have a more successful implementation process. The goal for the projects we investigated was to anchor the changes in the organization. To achieve this, it was important to form a powerful coalition with the stakeholders and spend time creating and communicating a vision for change to show why the digitalization project is important. Another important factor was to have a person responsible for the project with the right authority, influence and motivation. The most used implementation strategy was an incremental approach which can be linked to the stage the application was in. A big-bang approach was used by some institutions that came later, which also worked and resulted in more users getting to use the application than with an incremental approach.

By researching what implementation strategies, the higher education sector uses, it is possible to highlight the different strategies and create awareness about implementation strategies when it comes to new systems. We have seen what challenges can arise in an implementation process and what their positive experiences were. This information can be used in other implementation projects to avoid the pitfalls we discovered. Our research can also make it possible for other institutions to learn from their experiences and improve the implementation process.

7.3 Further research

This study has focused on digitalization and implementation strategy in higher education and used MOSO as the case. As we have only focused on highlighting the strategies further research could go a step further and compare these strategies using a quantitative approach to discover which strategy is most suitable to use, what challenges occur most often and how to avoid these challenges.

Recently the COVID-19 pandemic has effectively shut down a lot of schools and businesses which has made it a necessity to use digital tools to be able to work efficiently. It would be interesting to see if there are any changes after this pandemic blows over on people's perception on technology and digital tools, and if the results of our study would be different.

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9.0 Appendices

Overview over the appendices:

9.1 Appendix A: Declaration of Consent for Respondents

9.2 Appendix B: Interview guide higher education institutions

9.3 Appendix C: Interview guide MOSO employees

Vil du delta i forskningsprosjektet

«*Change Management in Digitalization of Higher Education: A Case Study of MOSO Implementation*»

Dette er et spørsmål til deg om å delta i et forskningsprosjekt hvor formålet er å danne et bilde på hvordan ulike universiteter har implementert et spesifikt digitalt verktøy (*MOSO*). I dette skrivet gir vi deg informasjon om målene for prosjektet og hva deltakelse vil innebære for deg.

Formål

Dette forskningsprosjektet er en del av en mastergradavhandling der vi skal se nærmere på hvordan implementeringen av et digitalt veiledningsprogram (*MOSO*) har foregått ved forskjellige universiteter. Formålet med prosjektet er å danne et overblikk på hvilke metoder og faktorer som spiller inn når høyere utdanningsinstitusjoner implementerer digitale løsninger og hvordan dette påvirker bruken av verktøyet.

Problemstillinger:

What implementation strategies do public higher education institutions use when implementing MOSO?

What are the challenges the higher education institutions have encountered when implementing MOSO?

Hvem er ansvarlig for forskningsprosjektet?

Universitet i Agder / Institutt for informasjonssystemer er ansvarlig for prosjektet. Veileder er Margunn Aanestad og Cathrine Edelhard Tømte.

Hvorfor får du spørsmål om å delta?

For å kunne svare på vår problemstilling, har vi et behov for å få informasjon fra ulike aktører. De ulike aktørene vi er interessert i er: faglærere ved et universitet/høyskole, avdelingsledere ved et universitet/høyskole, studenter ved et universitet/høyskole og praksisveiledere. Vi har valgt å spørre akkurat deg siden du passer inn i en av disse målgruppene og har erfaring med *MOSO*. Vi har funnet dine kontaktopplysninger gjennom vårt nettverk.

Hva innebærer det for deg å delta?

Hvis du velger å delta i prosjektet, innebærer det at du blir intervjuet av oss. Det vil ta deg ca. 30-60 minutter å svare på spørsmålene. Intervjuet vil bli transkribert og lagret hos Universitetet i Agders databehandler Microsoft OneDrive.

Intervjuet vil hovedsakelig inneholde spørsmål om valg av anskaffelse, implementering av *MOSO*, bruk av *MOSO*, dine tanker rundt implementasjon av *MOSO* og videre planer.

Vi vil samle inn følgende personopplysninger:

Navn: For å kunne få samtykke til lydopptak av intervju må vi behandle dette

E-post: For å kontakte intervjuobjekter via e-post

Lydopptak: For å kunne transkribere, kode og analysere intervjuene senere

Bakgrunnsopplysninger som vil kunne identifisere en person:

Stilling: For å sammenligne svarene fra samme stilling for forskjellige institusjoner

Arbeidssted: For å kunne skille hvor svarene kommer fra

Det er frivillig å delta

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

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.

- Det vil kun være oss som utfører prosjektet som har tilgang til lydopptaket.
- Det vil kun være oss som utfører prosjektet som har tilgang til transkribert intervju
- De som har tilgang til anonymiserte intervjuer er:
 - Vi som utfører prosjektet
 - Veilederne våre
- Vi vil kode dine personopplysninger. Så navnet og kontaktopplysningene dine vil bli erstattet med en kode som lagres på en egen navneliste adskilt fra øvrige data. Det er dermed ikke mulig å koble deg til det som blir skrevet i oppgaven.

Hva skjer med opplysningene dine når vi avslutter forskningsprosjektet?

Prosjektet skal etter planen avsluttes 04.06.20. Ved prosjektslutt vil alle intervju opptak, kode-ark, og alt annet personlig informasjon bli slettet.

Dine rettigheter

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

- innsyn i hvilke personopplysninger som er registrert om deg,
- å få rettet personopplysninger om deg,
- få slettet personopplysninger om deg,
- få utlevert en kopi av dine personopplysninger (dataportabilitet), og
- å sende klage til personvernombudet eller 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 Universitet i Agder 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:

- Universitet i Agder ved Magnus Høvik, magnh15@uia.no (Student)
- Universitet i Agder ved Mohammad Hussain, mohamh15@uia.no (Student)
- Universitet i Agder ved Professor Margunn Aanestad, margunn.aanestad@uia.no (Prosjektansvarlig / Veileder).
- Universitet i Agder sitt personvernombud: Ina Danielsen, ina.danielsen@uia.no
- NSD – Norsk senter for forskningsdata AS, på epost (personverntjenester@nsd.no) eller telefon: 55 58 21 17.

Med vennlig hilsen Magnus Høvik og Mohammad Hussain

Prosjektansvarlig
(Forsker/veileder)

Eventuelt student

Samtykkeerklæring

Jeg har mottatt og forstått informasjon om prosjektet «*Implementering av et digitalt verktøy i praksisveiledning: Case studie i UH-sektoren*» og har fått anledning til å stille spørsmål. Jeg samtykker til:

- å delta i *intervju*

Jeg samtykker til at mine opplysninger behandles frem til prosjektet er avsluttet, ca. 04.06.20

(Signert av prosjektdeltaker, dato)

Intervju guide UH-sektor

Åpning

Introduserer oss selv. Informere om:

- Samtykkeskjema
- At intervjuet blitt tatt opp (etter gjeldende lover og retningslinjer)
- Deres innsynsrettigheter
- Deres angremuligheter (kan trekke godkjenningen)
- Alt vil bli anonymisert

Intro

Dette intervjuet blir gjennomført for å hjelpe oss danne et datagrunnlag om hvordan implementeringen av MOSO har foregått hos dere. Vi skal i vår masteroppgave se nærmere på hvordan ulike universiteter har implementert MOSO og hvilke utfordringer dere har møtt.

Spørsmål

- 1. Kan du si litt om deg selv og om din stilling?**
 - a. Si litt om din stilling og posisjon ved X universitet / høyskole
 - b. Si litt om hvordan du er tilknyttet MOSO
 - i. Hvor lenge har du vært involvert med MOSO?
- 2. Kan du fortelle litt om hvordan implementeringen av MOSO har foregått?**
 - a. Hvordan har implementering av MOSO foregått?
 - i. Hvem har ansvaret?
 - ii. Hvordan ble det implementert?
 1. Frivillig – Tvunget bruk?
 2. Hvor mange prosent?
 3. Hvilke områder?
 - iii. Hvordan ble/blir dette fulgt opp?
 - b. Hvilke organisatoriske endringer har MOSO medført
 - c. Hvilke organisatoriske endringer har blitt innført før å imøtekomme MOSO?
 - i. Endringsledelse
 - d. Hvilke utfordringer har du/dere hatt med implementeringen av MOSO?
- 3. Kan du fortelle litt om hvordan bruken/innføringen av MOSO har foregått?**
 - a. Hvor mange bruker MOSO?
 - b. Hvor ofte brukes MOSO?
 - c. Hvem bruker MOSO?
 - d. Hvorfor bruker ikke alle MOSO?
 - e. Hva er grunnen til at noen ikke bruker MOSO?
 - f. Hvordan brukes MOSO?
 - g. Hvem er ansvarlig for opplæring?
 - h. Hvem er ansvarlig for driften?
 - i. Hvilke tiltak har blitt igangsatt for å imøtekomme bruken av MOSO?

- i. Opplæring av praksisveiledere, faglærere, studenter
 - j. Hvilke vurderinger har blitt gjort av MOSO?
 - k. Hvilke utfordringer har du/dere hatt med bruken/innføringen av MOSO?
- 4. Har du noen tanker / refleksjoner rundt implementasjonen av MOSO?**
- a. Hva har gått bra?
 - b. Hva kunne gått bedre?
- 5. Kan du nevne hva du tror har vært suksessfaktorene for implementeringen av MOSO?**
- a. Noen utfordringer?
- 6. Implementering av beta versjoner**
- 7. Hvordan sjekker dere om MOSO er vellykket?**
- 8. Kan du si litt om planene videre er for bruken av MOSO?**
- 9. Er det noen spørsmål eller temaer du mener er viktig som vi ikke har tatt opp?**
- 10. Samarbeidet mellom MOSO og universitetet**

Avslutning

Takke intervjuobjektet for tiden de har satt av og spørre om det er greit at vi stiller dem oppfølgingsspørsmål om dette er nødvendig.

Intervju guide MOSO

Åpning

Informere om:

- Samtykkeskjema
- At intervjuet blitt tatt opp (etter gjeldende lover og retningslinjer)
- Deres innsynsrettigheter
- Deres angremuligheter (kan trekke godkjenningen)

Intro

Teamet for prosjektet er: «*Implementering av et digitalt verktøy i praksisveiledning: Case studie i UH-sektoren*» Dette intervjuet blir gjennomført for å danne et datagrunnlag for å kunne svare på problemstillingen: *Hvordan implementeres MOSO i flere forskjellige universiteter? Og hvilke utfordringer møter de på.*

Spørsmål

- 1. Kan du gi oss litt bakgrunnsinformasjon om deg selv?**
- 2. Kan du gi oss litt bakgrunnsinformasjon om MOSO.**
 - a. Kan du kort beskrive hva MOSO er?
 - b. Hva er din rolle i MOSO?
 - c. Kan du si litt om hvordan MOSO ble startet?
 - d. Hvordan har MOSO applikasjonen utviklet seg
 - e. Hvordan har organisasjonen MOSO utviklet seg?
- 3. Kan du si noe om kundene deres og kundeutviklingen?**
 - a. Hvor mange kunder har dere nå?
 - i. Hvem er kundene?
 - ii. Når kom disse kundene inn?
 - b. Hvor mange brukere har dere (studenter og praksisveiledere som bruker verktøyet)?
 - i. Hvordan har brukerutviklingen vært?
 - c. Hva er hovedfokuset deres akkurat nå mtp kundeutvikling
- 4. Kan du fortelle litt om hvordan MOSO blir møtt av kundene deres?**
 - a. Hvordan hører kunder om deres verktøy?
 - b. Har dere opplevd noe motstand mot MOSO?
 - i. Hva er de vanligste utfordringene dere møter på?
 1. Kostnad?
 2. Teknologi forståelse?
 3. Motstand mot endring?
 4. Osv.
 - c. Hvordan følger dere opp kundene?
 - d. Har dere noen samarbeidspartnere?
- 5. Kan du fortelle litt om hvordan implementeringen av MOSO foregår?**
 - a. Hvilken implementeringsmetodikk anbefaler dere?

- b. Har dere noen opplæringskurs?
- c. Hvordan følger dere opp implementeringen?
- d. Hvordan er fremgangsmåten for å implementere MOSO for kunder?
 - i. Hvordan implementerer kundene deres verktøyet? (frivillig – tvunget)

6. Kan du fortelle litt om «videre planer for MOSO»?

- a. Planlegger dere å utvide MOSO?
 - i. Nye land?
 - ii. Bruksområder?
- b. Nye implementerings strategier?

7. Er det noen spørsmål eller temaer du mener er viktig som vi ikke har tatt opp?

Slutt kommentar

Har du/dere noen slutt kommentarer angående «*Implementering av et digitalt verktøy i praksisveiledning: Case studie i UH-sektoren*» og MOSO.

Avslutning

Takke intervjuobjektet for tiden de har satt av og spørre om det er greit at vi stiller dem oppfølgingsspørsmål om dette er nødvendig.