

Master of Information Systems: Digital Business Systems

A multiple-case study of Cloud ERP in the Norwegian public sector: From
adoption to implementation

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Abstract

Cloud computing (CC) technology has emerged as a favorable solution for organizations due to the urgent need for complex IT infrastructures. Hence, organizations across various sectors have moved their attention toward outsourcing computing platforms. Enterprise-resource planning (ERP) systems aid organizations in obtaining an understanding of business practices by allowing seamless integration of business accurate data for decision-making. Cloud ERP has the potential to deliver the same system functionalities as on-premise systems, at lower costs and effort. However, the uptake of such technologies has been reported as particularly low for public sector organizations (PSOs) when compared with private firms.

This study aims to explore factors influencing Norwegian PSOs intention to adopt cloud ERP, and which critical success factors are considered vital for a successful implementation. Furthermore, we illustrate the dynamic relationship between barriers at distinct phases. The research questions have been studied in a multiple case study, where the data has been collected through individual semi-structured interviews with Norwegian PSO representatives who either plan to adopt or have already implemented cloud ERP. The findings align with previous research regarding factors such as availability, reduced costs, updates, and maintenance. The findings also support that there is a link between organizational size and the desire to adopt. Contradictory, the findings reveal previously reported barriers such as security, vendor lock-in, lack of customization, and data ownership not to be perceived as direct barriers. Accordingly, our findings indicate more willingness among Norwegian PSOs to embrace cloud ERP than previously reported.

In the implementation stage, the findings closely resemble previous research. Factors such as user training, vendor selection, system integrations, and functionality are considered critical success factors among the Norwegian PSOs. One contradiction was discovered regarding project management, as the findings indicate that PSOs put more emphasis on a project team, rather than project management in isolation. Lastly, the results add to current research by identifying the dynamic interrelationship between barriers within distinct phases. Our findings suggest that open lines of communication amongst all parties involved are crucial throughout the entire process. The establishment of a solid contract is also considered vital.

Keywords: Cloud ERP, Public Sector, Adoption, Implementation, Barriers, CSFs

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1. Introduction

Because of the rising need to develop complex IT infrastructures, cloud computing has become a favorable solution. Traditionally, enterprises had to manage their software installations, configurations, and updates. Computing resources and other hardware as we know them are quickly becoming obsolete. As a result, outsourcing computing platforms is a wise choice for consumers who must manage complicated IT infrastructures (Wang, Laszewski, Younge, Kunze, Tao & Fu, 2010). CC delivers scaled computing to the data center and introduces the software, systems, and programming models that make accessing and exploiting these resources substantially easier (Grossman, 2009). Furthermore, it enables businesses to stimulate benefits that entail better intelligence, creativity, flexibility, efficiency, and reduced costs. This has driven organizations across industries to adopt cloud software applications in addition to or in replacement for their traditional systems, such as CRM (customer relationship management), Human Resources, and ERP (enterprise resource planning) (Weng & Hung, 2014).

ERP systems are defined as integrated, enterprise-wide, packaged software applications that impound profound knowledge of business practices (Shang & Seddon, 2000, p. 1005). Traditional ERP systems consist of different business operative functions such as manufacturing, human resources, finance, accounting, operations and logistics, and sales and marketing (Davenport, 1998; Esteves & Pastor, 1999; Weng & Hung, 2014). Based on the flow of information across business units and functions, ERP enables seamless integration of business accurate data for decision making (Davenport, 1998; Shang & Seddon, 2000). However, despite the benefits brought by ERP – the implementations are usually costly, time and resource-consuming (Sædberg & Haddara, 2016, p. 2). Further, the success rate of on-premise ERP implementation is considered unfortunate low, and in some cases, documentation has revealed a failure rate close to 90% (Weng & Hung, 2014). Respectively, we will quote Davenport (1998, p. 128): “*Enterprise systems can deliver great rewards, but the risks they carry are equally great*”. Hence, organizations have moved their attention toward next-generation ERP systems, specifically cloud ERP (Weng & Hung, 2014).

According to Gartner, the advent of CC has entailed a generational technology shift in the ERP market (Ahn & Ahn, 2020), that drives modern organizations to migrate their internal ERP applications and databases into the cloud (Peng & Gala, 2014), either as hybrid systems or pure

cloud ERP systems (Demi & Haddara, 2018, p. 588). Software as a service (SaaS) is one of the services offered by cloud providers. Cloud ERP systems fall in the category of cloud services (Mahmood & Khan, 2019, p. 643). While cloud ERP has been existing for almost two decades, the phenomenon has generally been under-researched (Bjelland & Haddara, 2018). Previous research has provided evidence that underpins the organizational benefits of adopting cloud-based ERP systems. Identified benefits involve increased efficiency, reduced costs, automatic and easy upgrades, mobility, accessibility, and availability (Peng & Gala, 2014; Elmonem et al., 2016). In addition, cloud ERP systems are predicted to have quicker implementation time, be more user-friendly, and be more scalable, than traditional on-premise enterprise systems (Elragal & Kommos, 2012). Previous research has also suggested that the cloud ERP lifecycle is likely to exceed the traditional ERP lifecycle (Demi & Haddara, 2018). However, despite the promising benefits – the deployment of Cloud ERP systems fosters new organizational challenges and concerns that may interpret its widespread adoption. The rising challenges brought by cloud technologies are highly linked to transparency and data privacy, data security, vendor lock-in, and integration difficulties (Peng & Gala, 2014). Accordingly, academics refer to Cloud ERP as a “new dilemma” for modern organizations (Peng & Gala, 2014).

1.1 Problem statement & research questions

As outlined in the previous paragraph, CC provides significant benefits to an organization but also comes with challenges that put enormous pressure on organizations. In the context of public sector organizations, digitalization is often associated with a broad set of challenges (Magnusson, Khisro, Bjørnes & Ivarsson, 2020). Therefore, to gain a competitive position in the digital era, it remains critical for PSOs to make efforts to quickly and cost efficiently locate new alternatives to run their businesses (Magnusson et al., 2020). Previous research found that even though some PSOs are aware of the obtainable advantages spawned by CC, there is still a demand for more convincing evidence to increase their willingness to adopt (Sallehudin, Razak & Ismail, 2015). In 2014 Gartner forecasted that within 2019, the transition to cloud ERP would become mainstream for most organizations (Sædberg & Haddara, 2016). Through this transition from on-premise ERP to cloud-based ERP, PSOs have experienced a failure rate of 33% in cloud-based implementations (Miller, 2020). Cloud ERP has experienced a high level of acceptance in Norway. However, as seen in a Norwegian study by Sædberg and Haddara (2016) private firms have a considerably higher adoption rate than PSOs. Further, the concerns of data security, service outages, regulatory compliance, system performance, third-

party integration, and scarce IT expertise are considered key impediments to cloud ERP implementation in the public sector (Miller, 2020, p. 2). Hence, it is essential to educate public sector organizations on the benefits of adopting cloud ERP, while providing applicable solutions that can cope with identified risks (Miller, 2020).

Based on this, we want to address which factors Norwegian PSOs perceive as beneficial and challenging with cloud ERP systems. Previous research provides indications that suggest there is a presence of skepticism and reluctance amongst PSOs (Sædberg & Haddara, 2016). Thus, it appears to be a challenging issue for cloud vendors to convince PSOs to adopt their services. Consequently, this paper assumes that this perception has a negative influence on Norwegian PSOs intentions to adopt cloud ERP systems, which has led to the following first research question (RQ):

RQ1: Which factors affect Norwegian PSOs intentions to adopt cloud ERP systems?

Moreover, previous research also revealed concerning statistics accentuating the failure rate of cloud ERP implementation within the public sector. Such a low success rate for organizations within the public sector is concerning, but not perilous. We assume that an investigation of critical success factors (CSFs) for cloud ERP implementation in the public sector would be an appreciated initiative. This is due to our anticipation that such research will provide guidelines for cost-efficient and successful implementation, valued by both vendors and adopters. For instance, it's in our belief that vendors can apply outcomes to formulate marketing and sales strategies for their cloud ERP services. On the other hand, we assume that the identification of contextual CSFs tailored for the Norwegian public sector organizations will decrease the risks for future implementations. Based on the reflections above, we will add the following second research question:

RQ2: Which CSFs are considered vital for succeeding with cloud-based ERP implementation amongst public sector companies?

Approximately two decades ago, an intriguing research avenue in the context of on-premise ERP systems investigated the following query: “*Can early success be followed by failure and vice versa?*” (Markus, Axline, Petrie & Tanis, 2000, p. 245). The study demonstrated that various measures of success are accessible at different stages of the ERP experience cycle

and that results recorded at one phase are only tangentially connected to those measured in later phases. Accordingly, the relationship between conditions and difficulties for the ERP experience is not deterministic and necessarily interrelated between the various phases (Markus et al., 2000). In correspondence, research within the sphere of cloud ERP has emphasized that adoption may entail adverse outcomes that may foster new barriers which negatively affect the extent of success with cloud ERP (Peng & Gala, 2014). Based on this, we will also investigate the extent of dynamism between barriers that can influence an organization's experiences with cloud ERP. Thus, we add the following third research question:

RQ3: How do the barriers identified during the adoption phase lead to new complications in the later stages?

The thesis is organized as follows: First, a literature review will be presented in chapter 2, which presents cloud-based ERP according to the different phases of the lifecycle, as well as a developed research model. In the third chapter, the research methodology will be presented, which will explain how the project was carried out. The findings of the study will be presented in chapter 4, followed by a discussion in chapter 5 which will examine the results in relation to the theory. In the final chapters, the conclusion (chapter 6), implications for practice and research (chapter 7), limitations (chapter 8), and suggestions for future research (chapter 9) will be presented.

2. Literature review

Due to the comprehensiveness of this study, our search strings entailed several keywords and various combinations. Amongst these, “cloud ERP adoption”, “cloud ERP implementation”, “cloud ERP adoption public sector”, “SaaS ERP adoption”, “public sector innovation”, “benefits and barriers of cloud ERP”, and so on were applied. Considering there is a limited sum of direct relevant research papers on the adoption subject, this thesis has opted to include research covering CC adoption in PSOs. Some references are also from the private sector. The purpose of this is to obtain an inclusive overview and a solid foundation for subsequent discussion. The first section will provide an overview of the industry. Section 2.2 will provide an introduction to ERP and its lifecycle. Further, 2.3 examines the current adoption literature. The literature on implementation is reviewed in Section 2.4. Lastly, in section 2.5, the study's research model is presented.

2.1 Public sector

The public sector represents the general government, which includes all levels of government, regulatory agencies, and governmental institutions that provide services such as health, security, education, and so on. It also includes publicly owned corporations (Arundel et al., 2019). From the last years of the twentieth century to the early years of the twenty-first century, organizations within the public sector have transformed fundamentally on an almost global scale (Lapsley & Miller, 2019). The public sector accounts for between 20% and 30% of Gross Domestic Product (GDP) in high-income countries, with Scandinavia reporting the highest shares. In countries such as Canada, Australia, the United Kingdom, and the United States, the share of manufacturing in GDP is significantly lower, as it amounts to roughly 10% (Arundel et al., 2019).

While there has been a tremendous change in both the public and private sectors in terms of IT innovations and digital transformation, scholars and practitioners have acknowledged that there are differences between the various sectors. According to Benbunan-Fich et al. (2020) what distinguishes the public sector from the private sector is that they need to have a focus on delivering services while still creating public value. Thus, applying existing theoretical paradigms of IT-enabled innovation, or implementing innovative practices from the private sector is considered inadequate.

2.1.1 Norwegian public sector

In Norway, the public sector is divided into two levels of sub-national government: 11 counties and 356 municipalities, with each stage governed by elected councils (Westskog et al., 2022). County municipalities are primarily in charge of business development and regional planning, culture and heritage, upper secondary education, environmental issues, public transportation, and county roads (Ibrahim, 2022). Municipalities, on the other hand, are responsible for major welfare, educational, and technological infrastructure for their residents (Westskog et al., 2022).

Kommunesektorens Organisasjon (KS), previously known as Kommunenes Sentralforbund, a central organ for municipalities, set a goal that by 2008, every municipality should be able to demonstrate that their IT projects resulted in improved services, resource savings, and more efficient operations (Pälvärinta & Dertz, 2008). To achieve this goal, KS initiated actions in 2006 to incentivize municipalities to implement tools and techniques for benefits management and realization (Pälvärinta & Dertz, 2008).

Since then, we have seen a major evolution in the public sector of Norway and its use of technological solutions. In 2015, the Norwegian government unveiled its digital agenda, which outlined how ICT could continue making living easier and increase productivity. They highlighted how cloud services are becoming the dominant way of delivering ICT solutions to organizations and customers. Because of their scalability and pay-for-what-you-use model, cloud solutions are considered to be sufficient solutions for public-sector organizations looking for cost-effective ICT solutions (Regjeringen.no, 2016).

2.2 Enterprise-Resource planning

2.2.1 On-premise & cloud-based ERP

ERP systems are information systems that are customizable and incorporated to integrate enterprise-wide business activities and operations. These systems arose to replace legacy silo systems by establishing a shared and integrated solution for the organization's information-processing necessities (Haddara, 2018). By incorporating such a solution, the organization can manage human resources, sales and distribution, project management, financial and accounting, supply chain management (SCM), and quality management through various applications (Ullah et al., 2017; Shebab et al., 2004). Furthermore, the primary goal of an

ERP system is to centralize information through a centralized database. As a result, software modules that share a central database will be able to exchange information between these applications (Ullah et al., 2017).

Since the introduction of ERP, the systems have evolved substantially. What began as applications which specialized in either finance, production, or human resources has progressed into systems that provide a broad range of coverage. According to Haddara (2018), a unified database underpins the standard in-house ERP systems. This means that the database could be stored locally for on-premise ERP implementations, or outside the boundary of the organization for cloud-based ERP systems. Whichever solution the organization might choose, the system gathers data from the various business functions. Though both solutions apply to businesses, we have seen a shift in the last decade toward more cloud-based systems. According to Alsharari, Al-Shboul, and Alteneiji (2020) to maintain a competitive position, many organizations have had to increase their productivity, and profitability and reduce their costs as globalization has increased. As a result, innovative methods, and technologies, such as cloud-based services, have been embraced. They are influential in the developments because they provide benefits such as rapid flexibility, broad network access, and high scalability (Alsharari et al., 2020).

2.2.2 ERP lifecycle

According to Elragal and Haddara (2012), ERP deployment approaches and lifecycle phases may differ in name, detail, and the number of phases. Employment models generally comprise sequential phases such as adoption, selection, implementation, go-live, use and maintenance, and evolution (Elragal & Haddara, 2012, p. 24). However, irregular academic usage of these phases has facilitated some uncertainty regarding the actual particulars of each phase. For instance, while implementation is considered a singular phase within the project, it is frequently used as a reference to the adoption, installation, and the operational process of carrying the ERP online (Kachur & Kleinsmith Jr, 2013, p. 82). As our study attempts to address the distinct phases of adoption and implementation, we have decided to apply the ERP lifecycle framework by Esteves and Pastor (1999), as well as its definitions for the phases of interest. This is justified because the lifecycle has been endorsed to be applied in a cloud context (Demi & Haddara, 2018).

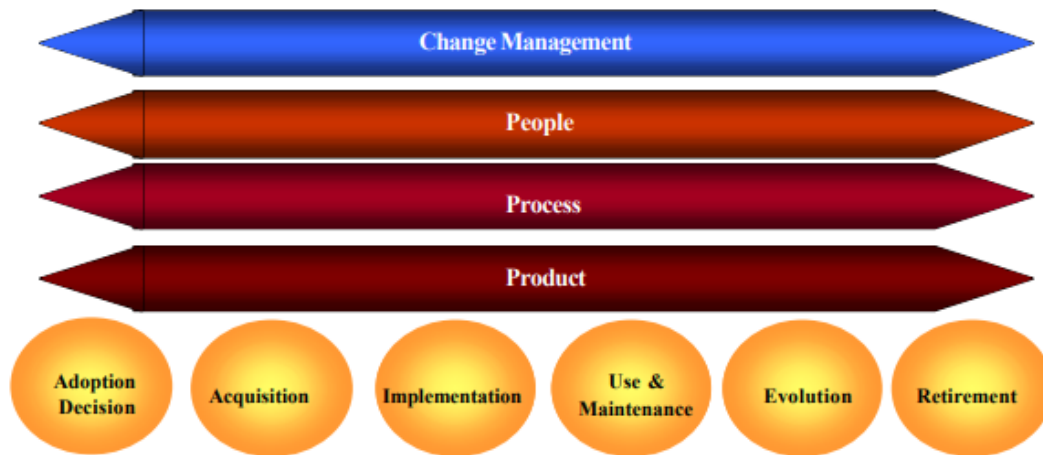


Figure 1. ERP lifecycle framework (Esteves & Pastor, 1999, p. 3)

Previous research has frequently used the technological, organizational, and environmental (TOE) framework published in 1990 by Tornatzky and Fleischer to structure and identify various factors within the adoption stage (Oliveira & Martins, 2011). This framework is distinct from others in the way that it addresses three key aspects of IT adoption within an organization. The technological context encompasses all the technologies important to the company (Baker, 2011). Descriptive organizational factors such as size, scope, and managerial structure are considered within the organizational context (Oliveira & Martins, 2011). The environmental context includes the regulatory and competitive environments (Ahn & Ahn, 2020), as well as industry and government policies (Low, Chen, & Wu 2011). The adoption section of the thesis will be structured accordingly.

2.3 Adoption of ERP

Following the definition by Esteves and Pastor (1999), the adoption phase includes decision-making in terms of system requirements, objectives, return on investment (ROI), and organizational impact. Naturally, researchers argue that there is no one-size-fits-all solution in the realm of cloud ERP and that an evaluation should be performed before adoption (Weng & Hung, 2014). Thus, organizations considering cloud ERP should assess the whole technological, organizational, and strategic ramifications before making a decision (Peng & Gala, 2014). This requires a systematic analysis of pros and cons, as one benefit may foster several challenges (Elmonem et al., 2016). Moreover, the acquisition phase includes the actual purchase of the system, based on the predefined system requirements within the

adoption phase (Esteves & Pastor, 1999). Based on this, this section will present up-to-date perceptions of benefits and barriers that are likely to influence Norwegian PSOs willingness to purchase cloud ERP.

As depicted in *Figure 2*, Peng and Gala (2014) identified a set of attractive economical and technical benefits that motivate organizations to move their ERP applications to cloud environments. These promising benefits are associated with lower costs, less responsibility related to system upgrades and maintenance, and increased efficiency, and availability. However, taking advantage of these benefits involves a tradeoff regarding new arising challenges. As illustrated, this entails new barriers that need to be addressed to achieve success with cloud ERP. These barriers relate to the risks associated with data security, privacy, vendor lock-in, integration difficulties, and other organizational challenges such as lack of top management support, poor communication, and inadequate change management. Based on this, the “*benefit and barrier ontology*” provides a strong basis for further study into cloud ERP adoption (Peng & Gala, 2014).

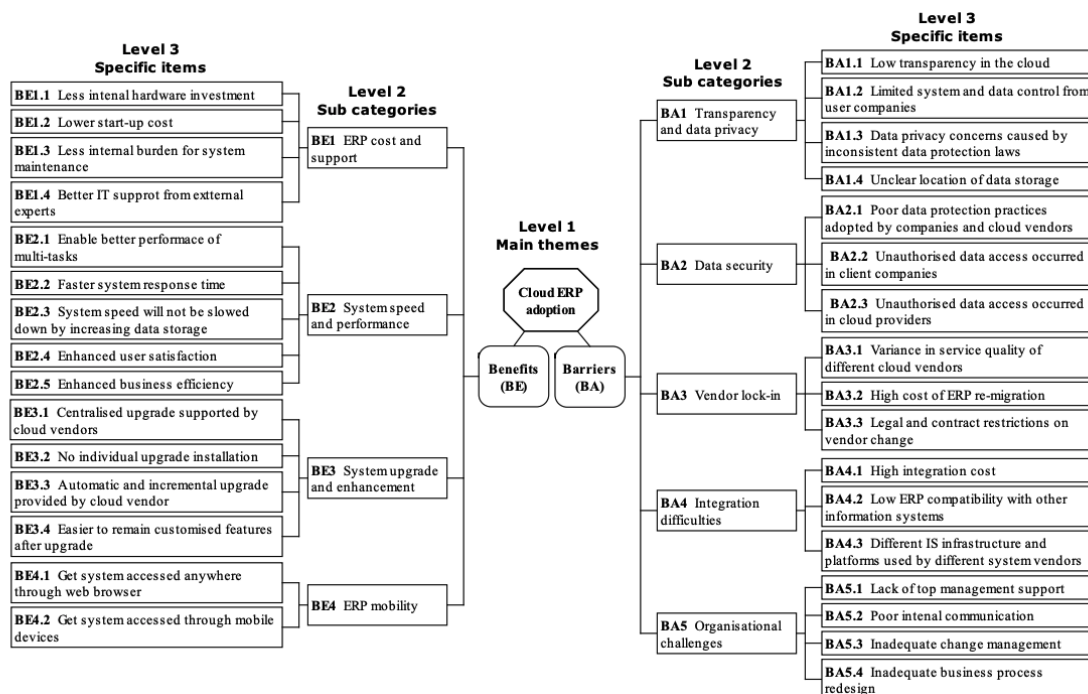


Figure 2. Ontology of barriers (Peng & Gala 2014, p. 25)

2.3.1 Technological Benefits

A Norwegian study on cloud services in the public sector discovered that the participating municipalities perceived costs, service development, scalability, flexibility, and increased

access to public services, as the prominent drivers of cloud adoption (Sanner, 2016, p. 9). Several adoption studies have embraced the Diffusion of Innovation Framework by Rogers (2003). The innovation characteristic of Relative Advantage (RA), is defined as follows; *“The degree to which an innovation is perceived as being better than the one idea it supersedes”* (Rogers, 2003, p. 229). In the context of cloud ERP, RA is commonly related to improved efficiency, performance, and decision-making, as well as reduced costs, and increased agility (Ahn & Ahn, 2020). I.e., RA has inevitably been identified as a driver of cloud ERP adoption (Albar & Hoque, 2017; Ahn & Ahn, 2020). Also, it has been an evident recurring factor in the CC adoption literature covering PSOs (Kuiper et al., 2014; Ali et al., 2015; Sallehudin et al., 2020).

Availability, Flexibility & Cost

The rewards of cloud ERP adoption are contingent on system quality – which may be referred to as cloud ERP’s performance attributes, such as flexibility and availability (Chang, 2020). Increased availability was perceived as the most beneficial reward of cloud ERP, amongst Norwegian public sector representatives (Sædberg & Haddara, 2016). This is also reflected by a case study drawing upon an organization’s experiences with cloud ERP, which categorizes the increased flexibility of database accessibility as a significant advantage (Alsharari, 2020). Inherently, the nature of the cloud is characterized by delivering increased flexibility and availability at reduced costs (Alsharari, 2021). Due to this, reduced costs, availability, and flexibility are frequently documented as perceived benefits of CC among PSOs (Janssen & Joha, 2011; Kuiper et al., 2014; Ayele & Juell-Skielse, 2015; Ali et al., 2015; Jones et al., 2019).

In terms of costs, cloud services do not oblige local infrastructure, which means that both investments and costs for the operation of ICT are affected (Sanner, 2016). Given that cloud ERP generally entails financial advantages that enable organizations to reduce their IT-related costs (Peng & Gala, 2014; Chang, 2020), and that costs are a significant underlying component within the RA factor, it is noteworthy that the Norwegian respondents did not weigh this aspect more heavily (Sædberg & Haddara, 2016). However, this contradicting finding does not undermine the general perception that reduced costs are considered a motivational factor.

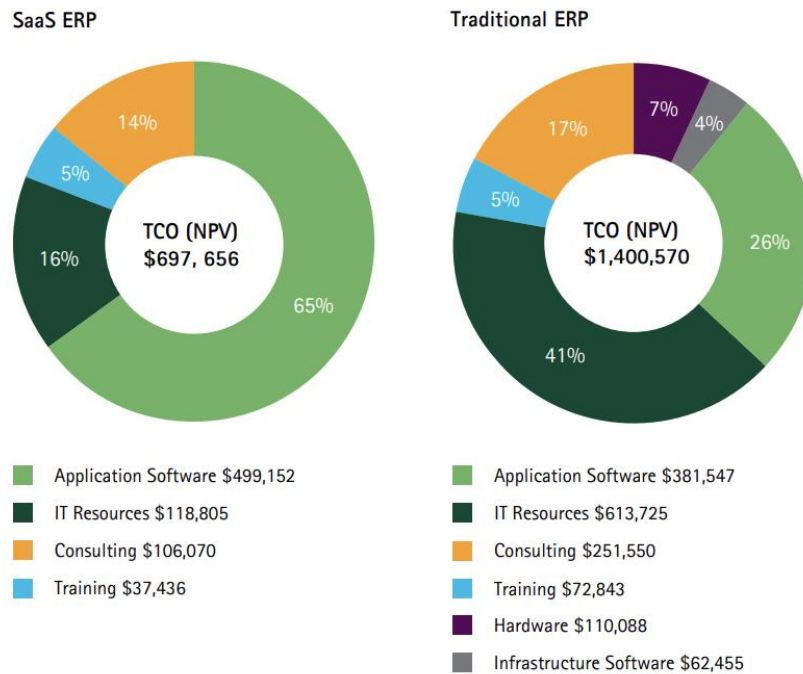


Figure 3. Cost comparison: On-premise ERP vs. SaaS ERP (Mattison & Raj, 2012, p. 5)

The diagram above visualizes a comparison of SaaS ERP and On-premise ERP regarding the total cost of ownership (TCO). It is worth noting that this comparison does not consider central software and hardware upgrades. If these events were included, the business case for cloud ERP would be considerably stronger (Mattison & Raj, 2012, p. 5). However, as depicted cloud ERP enables cost-saving opportunities related to reduced IT staff costs, and outsourced hardware (Mattison & Raj, 2012). This aligns with another comparison study, which correspondingly emphasizes lower TCO, due to the reduction of costs related to infrastructure, hardware, software implementation, maintenance, and updates (Elragal & Kommos, 2012, p. 8). Also, Chang (2020) found that cloud ERP systems enable cost reduction in terms of IT staff, hardware and software, and maintenance (p. 617). Naturally, the cost aspect has gained attention amongst various organizations. For instance, predictable licensing costs, and lower implementation costs were recognized by Swedish municipalities seeking to adopt cloud-based IS (Ayele & Juell-Skielse, 2015). This was also ranked the second benefit by Australian Municipalities, who were confident that CC adoption would entail less operational costs, reduce the need for local hardware, and finally ensure increased performance and sustainability in the long term (Ali et al., 2015, p. 545).

Rapid Updates & Maintenance

As mentioned in the paragraph above, cloud ERP entails reduced costs in terms of e.g., system updates and maintenance. Accordingly, faster, and centralized updates and maintenance that require little to no work from internal IT employees do entail substantial advantages (Peng & Gala, 2014), and not only in terms of costs. In this particular context, an investigation of system updates was carried out in Norway. The study contributed by summarizing the perceived benefits of system updates. Except for lower costs, the benefits included less required planning and testing, user access to the same software version, and regular and frequent updates that require fewer adjustments. Hence, less effort is needed to manage new updates, which allows for more spare time to focus on core competence and knowledge sharing (Bjelland & Haddara, 2018, p. 21). A case study adds to this by presenting experiences of how system upgrades consistently dealt with bugs and technical problems (Alsharari, 2020).

As a result, these technical benefits are widely considered motivational drivers for the adoption of cloud ERP. For instance, Norwegian private sector organizations ranked it as the third perceived advantage (Haddara, Fagerstrøm & Mæland, 2015), whilst Norwegian public sector representatives rated it as the second highest perceived benefit (Sædberg & Haddara, 2016). This enthusiasm may be due to reports from previous research indicating that IT managers in Norwegian PSOs devote significantly more effort to maintaining operative systems and services than those in private companies (Sædberg & Haddara, 2016). On the other hand, despite its promising benefits, it may include some issues as well. This relates to a lack of control and information regarding future updates, and when the future updates will occur (Bjelland & Haddara, 2018).

2.3.2 Barriers in Public Sector Innovation Processes

Cinar, Trott, and Simms (2019) conducted a review of barriers in the context of public sector innovation processes. Their study contradicts current theories that perceive barriers as precursors of innovation and predictions of future outcomes. Instead, the findings suggest that barriers have more than one dimension, making them more complicated and dynamic than previously documented. More precisely, they discovered that barriers could interact dynamically and fluctuate along process stages. New barriers may be fostered as symptoms of others and reinforce each other. As a result, errors at one step of the process may lead to more significant problems at a later phase (Cinar et al., 2019, p. 283).

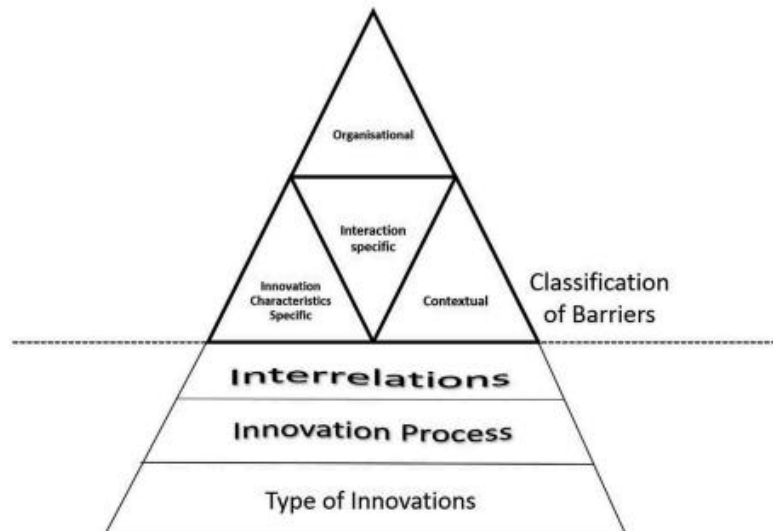


Figure 4. Framework of the nature of barriers (Cinar et al., 2019, p. 283)

Furthermore, barriers connected to organizational and innovation characteristics were more prominent for ICT innovations, than non-technological innovations (Cinar et al., 2019). The organizational barriers which consists of lack of ineffective management, organizational culture, and lack of expertise (Cinar et al., 2019), are frequently reported in the cloud ERP literature. In terms of innovation characteristics related to barriers, they adopted Rogers (2003) “*perceived attributes of innovation*”, and found evidence that barriers frequently were tied to software problems (Cinar et al., 2019). However, because the literature indicates evident barriers to cloud ERP (Peng & Gala, 2014), we will further explore the direct relevant ones. These include data ownership (Salleh, Teoh & Chan, 2012; Elmonem et al., 2016), security, customization, and integration restrictions, and vendor lock-in (Peng & Gala, 2014; Elmonem et al., 2016).

2.3.3 Technological Barriers & Risks

Despite the promising benefits, the literature encompasses several risks and barriers that are either anticipated or empirically proved to impede the adoption of cloud ERP. Generally, barriers are often associated with data security, privacy and transparency, and vendor lock-in (Peng & Gala, 2014). Additionally, findings from Sædberg and Haddara (2016) show that data ownership and lack of customization are considered massive disadvantages. Hence, it is predicted that prospective PSOs will be skeptical or cautious to adopt cloud ERP (Sædberg & Haddara, 2016). In light of this, we will further explore the risks and barriers associated with cloud ERP adoption in PSOs.

Data ownership

Data ownership has been considered a vast concern in the context of both general SaaS, and cloud ERP adoption. Issues may arise as customers own their data, but the software and data remain on the vendor's servers (Janssen & Joha, 2011). Hence, data ownership rights must be clearly defined in the service contract to provide a foundation for trust and data privacy (Jones et al., 2019, p. 365). It was evident in all cases that loss of control and lack of data ownership are key risks, as their data are stored externally and potentially may be viewed by a third-party vendor (Jones et al., 2019). Accordingly, the fear of privacy and lack of trust are essential barriers to CC adoption in PSOs (Kuiper et al., 2014). Analogously, findings from Lee (2019) show that businesses generally are cautious to embrace CC, due to e.g., sensitive data leakages. This is highly mirrored in the Cloud ERP literature, which emphasizes that lack of control and transparency raises privacy concerns, which naturally discourages firms from adopting (Peng & Gala, 2014). Based on this, the complications associated with data ownership are regarded as one of the primary barriers to cloud ERP adoption (Sædberg & Haddara, 2016).

Data security

Data security is frequently reported in terms of confidentiality and integrity. Confidentiality refers to the risks of unauthorized access, whereas integrity refers to the risks of data loss or vendor-related errors/failures (Saa, Moscoso-Zea, Costales & Luján-Mora, 2017) According to the National Strategy for the Use of Cloud Services (NSUCS), it has been a change related to which element is perceived as the larger risk in Norway. Previously, the majority of the concerns were connected to confidentiality, whilst newer reports indicate rising uncertainty regarding integrity (Sanner, 2016). Supportively, data security and integrity risks of stored data are considered the main weaknesses and threats on the subject of cloud ERP (Saa et al., 2017). Accordingly, Sædberg and Haddara (2016) predicted security to be the most influential disadvantage contradicting adoption amongst Norwegian PSOs. This was not recognized by the respondents. However, security was measured to be the 4th ranked disadvantage (Sædberg & Haddara, 2016).

In similarity, Ayele and Juell-Skielse (2015) were also astonished that the growing security risks were not seen as the most serious concern by Swedish municipalities but ranked as the 5th challenge. More surprisingly, cloud-related security issues were not considered a concern

by Australian municipality governments (Ali et al., 2015). This was also supported by Ahn and Ahn (2020) who failed to validate data security as a concern with sufficient clout to impede cloud ERP adoption among Korean enterprises. Moreover, research shows that certain PSOs have high trust in cloud-based data storage and system characteristics. Due to this, they view security issues as a result of inefficient warrants by cloud ERP suppliers, rather than the system itself (Alsharari, 2020, p. 10). Following the NSUCS, client organizations can increase their technical ICT security through cloud solutions – if the vendor possesses better IT expertise and assets (Sanner, 2016). When software is distributed via the cloud, the vendor frequently delivers a standardized solution. This implies that all clients will timely receive the same security mechanisms along with other system updates. Hence, clients who lack adequate internal protocols for such updates may attain increased security with SaaS (Sanner, 2016). Thus, before adopting cloud technology, firms should explicitly teach staff how to avoid security threats that might entail the loss of sensitive and confidential data (Weng & Hung, 2014). Also, vendors should educate customers on security mechanisms, such as authentication and authorization features that reduce the risks of hacking and unauthorized access (Lee, 2019).

Customization

As mentioned above, reduced costs are an important factor that positively influences the adoption of cloud ERP. However, not all organizations experience such monetary savings. This is especially applicable to those who have unique requirements that cannot be delivered as a standard solution, or if the shift entails the entry of complex architecture that necessitates numerous integrations with current systems (Sanner, 2016). The literature frequently reports this as applicable to cloud ERP, as customers often need to design or customize system functionality to meet their business requirements (Elmonem et al., 2016). Naturally, decision-makers have shown their concerns regarding the possibility that costs of customization will overshadow the benefits of cloud ERP. Another anxiety stems from the apprehension that customization may complicate system updates and maintenance (Mattison & Raj, 2012).

However, SaaS limits customers' ability to tailor business functions, as cloud-providers desire to attain economies of scale through standardization (Ayele & Juell-Skielse, 2015), the customers do not invest in customized solutions (Elmonem et al., 2016). Observations, however, reveal that opinions vary. Among Korean enterprises, customization constraints did not appear to have a substantial negative impact on cloud ERP adoption (Ahn & Ahn, 2020).

Conversely, because each country's climate is unique, findings regarding issues such as customization may differ from one country to the next (Ahn & Ahn, 2020). For instance, observations from Sweden show that restricted customization possibilities are ranked as the second highest challenge predicted to implicate cloud-based IS adoption (Ayele & Juell-Skielse, 2015). This aligns with Sædberg and Haddara (2016) who achieved support for their hypothesis regarding the general perception of lack of customization as a significant disadvantage.

Vendor Lock-In/Dependency

Vendor lock-in has been identified as a risk that is predicted to reduce the adoption of CC among PSOs (Kuiper et al., 2014). Further, Sædberg and Haddara (2016) discovered an intriguing result relating to the common recognition amongst respondents that emphasized the large issues of vendor dependence. It is further argued that this fear may stem from customers' concerns about allocating vendors more negotiation leverage as they own the ecosystem in which their data resides (Sædberg & Haddara, 2016, p. 13). This was also the case for Swedish municipalities, which saw the hazards associated with rising vendor dependency as the most difficult challenge for cloud-based IS adoption (Ayele & Juell-Skielse, 2015). As a result, Ayele and Juell-Skielse (2015) advocate for the importance of defining long-term strategies to diminish the extent of vendor dependency. Vendor lock-in was likewise verified as the most critical factor influencing Korean enterprises' reluctance to embrace cloud ERP systems (Ahn & Ahn, 2020). On the contrary, this concern was not shared by either of the case organizations. The authors contend that this is because their deployed cloud solution is a top industry solution (Jones et al., 2019, p. 375). This is reinforced by Peng and Gala (2014), who demonstrated that vendor lock-in concerns are frequently motivated by the wide variation in system quality. Accordingly, if client organizations are dissatisfied with their present solution, they will almost certainly seek to transfer their data and set-ups to another vendor (Peng & Gala, 2014).

2.3.4 Organizational Barriers & Challenges

In the ERP literature, organizational issues are to a large extent documented as one of the key reasons companies fail to succeed with their on-premise ERP installations. The organizational aspect is crucial in the success of cloud ERP adoption as well (Peng & Gala, 2014). As depicted in Figure 2, organizational barriers often relate to a lack of top management support, poor internal communication, inadequate change management, and inadequate business

process redesign (Peng & Gala, 2014, p. 25). Other researchers have advocated for the importance of organizational size (Sædberg & Haddara, 2016), organizational culture (Ahn & Ahn, 2020; Alsharari, 2021), and lack of internal knowledge (Elragal & Kommos, 2012; Salim, 2013; Sædberg & Haddara, 2016; Ahn & Ahn, 2020).

Top Management Support

Insufficient top management support in user companies will predictably demotivate staff and entail poor cross-functional collaboration in the adoption phase. Moreover, these barriers are believed to foster added complications when dealing with the major technological, organizational, cultural, procedural, and task-related changes brought by cloud ERP (Peng & Gala, 2014, p. 28). Hence, senior management support is regarded as the most significant success factor in cloud ERP adoption (Albar & Hoque, 2017). This is largely reflected in the literature covering CC adoption and implementation in PSOs, despite differences between countries. Australian municipalities perceive it as an important instrument to promote CC adoption. While also boosting performance and improving customer service (Ali et al., 2015). Swedish municipalities perceive a lack of clear system implementation strategy and top management engagement as obstacles to achieving organizational transformation. Additionally, Malaysian PSOs considered it to be an essential predictor of success (Sallehudin et al., 2020), and it was also evident in all cases from the UK (Jones et al., 2019). While there is broad consensus on the matter, prior Norwegian investigations have highlighted that PSOs less frequently involve IT managers in senior management than private companies (Sædberg & Haddara, 2016).

Organizational Culture & Size

Organizational culture has been classified as uncertain, implying further research is needed to assess its impact on CC adoption in PSOs. This is due to cultural components such as avoidance of uncertainty and risk aversion vary by country (Kuiper et al., 2014). Findings from the UK suggest that PSOs should cultivate a cloud-aware culture to maximize the advantages of CC (Jones et al., 2019). Findings from Korea further recommend that organizations must be responsive and flexible, while also developing a collaborative, open, and tolerant culture (Ahn & Ahn, 2020, p. 16-17). On the contrary, research from Saudi Arabia found little evidence that organizational culture influences cloud ERP adoption. This means that neither organizational degree of responsiveness and flexibility, a high degree of support for business operations, nor good communication regarding the adoption's goals and

objectives had a substantial effect on enterprises' desire to adopt. In other words, corporate culture has little bearing on cloud ERP adoption in Saudi Arabia (Albar & Hoque, 2017). Moreover, in similarity to on premise ERP (Peng & Gala, 2014), cloud ERP substantially alters an organization's culture (Alsharari, 2021). These changes may generate barriers that arise from organizational structures and the incompatibility of current processes, which require effective change management during the adaptation stages (Alsharari, 2021).

Several researchers have devoted their academic intentions to cloud ERP and firm size, especially in the private market. Smaller firms are more accepting of cloud ERP since CCT allows them to raise their operative level of efficiency, flexibility, and scalability at a lesser cost (Salleh, Teoh & Chan, 2012, p. 9). Therefore, recent research argues that this focus has primarily been on small and medium-sized organizations (SMEs), who generally have limited resources and hence, find cloud ERP more appealing (Christiansen, Haddara & Langseth, 2022). Such arguments are reflected by Seethamraju (2015) who suggests that cloud ERP enables SMEs to profit from ERP systems without incurring the high costs of IT infrastructure, IT expertise, and software upgrades and maintenance (p. 489). Accordingly, in contrast to larger enterprises, SMEs are often perceived as more enthusiastic regarding possibilities and less cautious about issues such as security (Johansson, Alajbegovic, Alexopoulos & Desalermos, 2015). However, to our knowledge, Sædberg and Haddara (2016) are the only ones that have accomplished results that support this in the context of the public sector. Their results suggested that smaller Norwegian PSOs are more predicted to embrace cloud ERP soon (Sædberg & Haddara, 2016).

IT-Expertise & Knowledge

Elragal and Kommos (2012) emphasize that lack of knowledge impedes most companies in terms of cloud ERP adoption. Arguably, lack of knowledge affects the organizational strength and motivation in a negative sense that demotivate potential buyers to convert their on-premise ERP systems to the cloud (Elragal & Kommos, 2012). This is reinforced by indications endorsing that a lack of knowledge regarding CC acts as a barrier to adoption amongst PSOs (Al-Ruithe et al., 2017). Also, staff knowledge can positively affect the adoption of CC (Ali et al., 2015). Supportively, Sædberg and Haddara (2016) found indications of a favorable correlation between perceived knowledge of cloud ERP systems and adoption rate. Therefore, they consider the ability to understand systems as a significant predictor of adoption in Norwegian PSOs (Sædberg & Haddara, 2016).

Salim (2013) identified external and internal awareness as critical transition drivers in the entering stage of cloud ERP adoption. External awareness is described as vendor-supplied information, whereas internal awareness mirrors the organization's ability to make accurate business decisions that reflect the organization's needs. Thus, these factors may impact decision-makers' ignorance, which is believed to occur when members of the firm lack knowledge or are unable to explain their long-term vision (Salim, 2013, p. 8). Supportively, Sallehudin et al. (2020) advocate that vendors' involvement and education of cloud-based solutions may drive hesitating organizations' motivation towards adoption. Hence, others argue that SaaS and cloud ERP vendors should deploy strategic marketing activities set to educate and encounter negative perceptions affecting PSO's intentions to adopt (Sædberg & Haddara, 2016). Such marketing tactics can be observed in the study by Chang (2020) where participants learned about the benefits and drawbacks of adopting cloud ERP systems, allowing them to decide whether to migrate from incumbent ERP- to cloud ERP systems. However, Ahn and Ahn (2020) explored the extent to which ICT skills and knowledge influence the adoption of cloud ERP. Although ICT skills and knowledge were regarded as important factors, the study failed to demonstrate their statistical significance (Ahn & Ahn, 2020, p. 16).

Environmental factors

The environmental context contains the industrial structure, the existence or lack of technology service providers, and the regulatory environment (Baker, 2012). According to Sædberg and Haddara (2016), the factors influencing ERP system adoption in private enterprises do not apply directly to PSOs. Furthermore, PSOs must examine the software/hardware purchase process, the tendering process, security needs, data location rules, and so on (Sædberg & Haddara, 2016). For instance, the Norwegian procurement law requires the government to participate in an open tender competition when purchasing something with an estimated value of NOK 100,000 or more. *In Procurement Regulations Part I, the client may always use the open tender competition procedure.* (Regjeringen.no, 2018). While the law establishes the fundamental principles and requirements for procurement, they also need to rely on regulations, which go into greater detail about the rules that apply to the various procurement procedures. This law aligns with the definition of the acquisition phase as seen in Esteves and Pastor (1999), which involves determining which system best meets the predefined requirements.

Moreover, Difi (Direktoratet for forvaltning og IKT) has created a set of architectural principles that serve as standard guides for all public-sector ICT activity. The policy is mandated for government entities and is highly recommended for municipalities (Sanner, 2016). These principles involved e.g., technical interoperability in terms of technical standards that facilitate well-defined interfaces, and transfer protocols. Additionally, flexibility, scalability, and security are considered important principles when applying cloud services (Sanner, 2016).

2.4 Implementation of ERP

The implementation of Cloud ERP is always complex, demanding a range of risks to be considered to ensure the success of the implementation (Huang et al., 2021). Numerous factors influence the success of an ERP system implementation, both positively and negatively. According to Ijaz et al. (2014), these are acknowledged as critical success factors, which are factors that, if addressed, significantly improve the chances of project implementation. If these factors are not implemented effectively and promptly, the organization's outcome will be less than expected (Gupta et al., 2018). The high failure rates of ERP projects continue to be a source of concern (Ram et al., 2013), therefore research has sought to identify which factors are critical when it comes to implementing the system. Even though research has identified various factors over the years, the top three most frequently cited critical success factors during implementation are security, project management, and communication (Huang et al., 2021).

There have been divergent findings regarding the various factors that have been identified, however, research does agree on where the various CSFs can be expected to be found. According to Gill, Amin, and Saleem (2020), we separate inter-organizational, technological, and individual factors which influence the successful implementation of ERP. This is consistent with the findings of Huang et al. (2021), who claim that we distinguish between intrinsic and extrinsic types of CSFs. The intrinsic types of CSFs consist of organizational, technological, and human factors. The extrinsic types, on the other hand, are primarily organized by the cloud vendor. Extrinsic factors include compliance, network, and information security which can all have an impact on the successful implementation of cloud ERP (Gupta et al., 2018). There has been a great deal of research on the different CSFs in on-premise ERP implementation, but this has not been carried over to cloud ERP implementation. As a result, Huang et al. (2021) conducted a systematic literature review to identify and review the relevant factors within cloud

ERP. Furthermore, in the study, they identified thirty-five CSFs. The model below illustrates the 35 CSFs which were identified within intrinsic and extrinsic factors.

Intrinsic (32)			Extrinsic(3)
Organizational CSFs (15)	People CSFs (12)	Technological CSFs (5)	
<ul style="list-style-type: none"> • Communication within the company • Organization resistance • Project budget • Project management • Implementation strategy • Strategic goals and objectives • Business process re-engineering • organizational culture • knowledge base of the company • Project planning and control • Facilitating conditions • Organization size • The vision of the organization • Readiness of organizations • Clarity of potential cost 	<ul style="list-style-type: none"> • User involvement • Selection of vendor/consultant • Project team • Top management support • Training of user • Trust on vendor • Performance expectancy • Effort expectancy • Social influence • Age • Gender • Highest degree attained 	<ul style="list-style-type: none"> • Selection of ERP package • IT infrastructure • Data integrity and system testing. • Functionality • System was customized to suite business process 	<ul style="list-style-type: none"> • Security • Compliance • Network

Figure 5. CSFs in Cloud ERP (Huang et al., 2021, p. 4686)

The majority of the identified CSFs were intrinsic factors. As illustrated in the model, the organizational and people CSFs were the superior ones. This means that the vast majority of CSFs are under the control of cloud ERP users (Huang et al., 2021). While there are numerous reasons why some ERP implementation projects succeed and others fail, human factors, in particular, have been identified as the most significant contributor to the project’s success or failure (Goundar et al., 2021, p. 59). Although this may have proven to be true when it comes to the implementation of on-premise ERP systems, there may be distinctions when it comes to the implementation of Cloud ERP. In the study by Huang et al. (2021) they identified the top six CSFs from a total of thirty-five. These were: project management, security, communication, network, compliance, and organizational resistance. Because a high level of security and confidentiality is regarded as one of the benefits of on-premise ERP, organizations generally do not include security in their CSFs (Huang et al., 2021). However, when it comes to cloud ERP implementation, the data must be shared with a third-party service provider, so

organizations are particularly worried about how safe and protected their data is. As a result, when it comes to cloud ERP, security is one of the most crucial CSFs from the perspective of an organization (Huang et al., 2021). According to Gupta et al. (2018), the CSFs of SMEs and the concerns of cloud vendors must be in sync for the cloud-based ERP implementation to be deemed successful. Thus, in cloud-based ERP implementation, the organization should consider both intrinsic and extrinsic factors, as illustrated by Huang et al. (2021).

Project team & management

ERP implementations, whether simple or complex, require careful project management and a dedicated team in any firm size (Elragal & Haddara, 2012). Project management entails facilitating, planning, executing, and controlling multiple resources within the firm to complete the project on time (Gupta & Misra, 2016; Holland & Light, 1999; Lister, 2001; Somers and Nelson 2004; Hung et al., 2012; Ram et al., 2013). Further, a dedicated project manager can help to overcome barriers that occur during the implementation phase. A study conducted on an African banking institution discovered that there was a project manager with limited skills, which increased information asymmetry because the entire project was poorly documented and managed (Kamdjoug, Bawack, & Tayou, 2020) As a result, members of the organization lost faith in the ERP consultants and the ERP system's ability to deliver the expected results.

In addition to having a competent project leader, it is important to have a team that possesses different proficiency. According to Mahmood, Khan, and Bokhari (2019), the implementation of an ERP project requires the involvement of all stakeholders. Further, they emphasized that the involvement of different departments such as HR and IT personnel had a great impact on the successful implementation of ERP (Mahmood et al., 2019; Khan & Bokhari, 2018). This was also supported by the study of Kamdjoug et al. (2020) where one of the most critical success factors identified is the project team, and that the relationship with each actor must be managed effectively throughout the entire project. In scenarios where expertise could not be found within the company, hiring external consultants who could act as facilitators through the process could be identified as vital to the team (Kamdjoug et al., 2020).

Vendor selection & communication

When deciding to implement a cloud-based ERP system, organizations will need to select a vendor, just as they would when implementing an on-premise ERP system. The choice of a cloud-based system, on the other hand, will be distinctive. Traditional ERP systems are

controllable by the organization, whereas Cloud ERP systems are controlled by the vendor. As a result, the vendor can ensure ERP control on behalf of the organization (Weng & Hung, 2014). According to Gupta and Misra (2016) choosing the right vendor by the type of work a company wants to do is vital. Furthermore, they argue that the vendor's services can ensure data and information security because they can communicate about server location and comply with the different compliance norms (Gupta & Misra, 2016).

In the study of Mahmood et al. (2019), they found that selection of vendors in terms of both ERP and cloud ERP plays an effective role in successfully implementing the system in the organization. Under the given circumstances, the cloud user should select the vendor who will customize and adapt the most (Gupta & Misra, 2016). This was further supported by Mahmood et al. (2019) as they stated that both the vendor and customer must acknowledge the importance of collaboration. As seen in the study by Ganesh and Mehta (2016) where they studied cloud-based ERP implementation in Indian SMEs, they found that ERP systems could not provide a solution to the SMEs if issues were not understood by both the vendor and the customer. Thus, having a cordial relationship was emphasized. This was further supported by the study of Jones et al. (2019), where their findings indicated that having a two-way communication and relationship between organizations and suppliers was critical to an effective deployment of cloud technology.

IT infrastructure and system functionality

The organization will require less IT infrastructure in Cloud-based ERP systems (Gupta et al., 2018) because the entire range of servers, file storage, email, personal computers, telephones, and laptops will be provided over the internet, rather than being locally hosted on site by the organization (Jones et al., 2019, p. 359). This will increase the demand within the company for network infrastructure that provides a stable internet connection and faster download/upload speeds. Unreliable internet connections and slow download/upload speeds will cause problems or disruptions in services, resulting in cloud computing implementation failure (Sallehudin et al., 2020).

Even though they will require less IT infrastructure within the organization, they will need to migrate system functions from their existing systems to the new. According to Mahmood et al. (2019) to achieve supreme benefits from the ERP system, it needs to be integrated with other business systems. During the conversion to an ERP system, there may be issues with data

accuracy and validity (Gupta et al., 2018; Bajwa et al., 2004; Somers and Nelson, 2004; Saeed et al., 2012). Moreover, the integration of ERP modules can prove to be challenging while integrating with a legacy system (Mahmood et al., 2019). One of the organizations in the study by Jones et al. (2019) where they studied three organizations in the UK public sector experienced integration issues. They had unauthorized access to data as a result of a security breach. This was not an issue in the other organizations because their IT systems had been deployed to the cloud (Jones et al., 2019).

Organizational resistance

Resistance to change is the process of opposing or facing difficulties with alterations or transformations, which may affect the status quo in the organization (Mahmood et al., 2019, p. 639). In the study of Kamdjoug et al. (2020) some members of the organization's top management had a strained relationship. Because the opinions of end users were not considered before selecting ERP, users who were already opposed to the new system sided with those who were resistant within the top management. This hurt the relationship between the consultants and the members of the supplier. Furthermore, it complicated the implementation process. To overcome this opposition, they emphasized the importance of including every potential user and stakeholder in the selection process (Mahmood et al., 2019).

This was further supported in the study of Gupta et al. (2018) where they explained that an organization can face major challenges from employees when transitioning to cloud-based ERP. Moreover, the functioning of an organization when making changes can be vital for a successful implementation. There was a tense atmosphere during meetings and training sessions in the study of Kamdjoug et al. (2020), but Gupta et al. (2018) explain that adequate and regular employee training can help mitigate the risk of organizational resistance. According to Mahmood et al. (2019) when people are not IT literate, knowledge transfer for consultants can be more difficult. Training can therefore prove to appear as a hidden cost for organizations in many cases. Therefore, the ERP system necessitates regular training, and organizations should provide opportunities for skill enhancement to employees to meet change (Mahmood et al., 2019; Bingi et al., 1999).

2.4.1 Barriers to implementation

When incorporating new technological solutions in the public sector, organizations frequently encounter barriers that are recognized as innovation barriers. These barriers may also vary

depending on the phase of the integration. According to Cinar, Trott, & Simms (2021), the influence of organizational barriers decreases as one progresses from the adoption stage to the implementation stage, while the influence of interaction-specific barriers increases. Interaction-specific barriers are shaped by the interaction of various relevant stakeholders in the innovation process, which often makes it more complex (Cinar et al., 2021; Koch, 2006).

As more entities may be involved in the implementation stage of a cloud ERP system, such as different cloud vendors, collaboration is sought. Partnerships within government, across levels of government, and with both the private and non-profit sectors, as well as citizens, are the new norm (Daglio, Gerson & Kitchen, 2015). Another aspect that public sector organizations need to have in mind is scaling. According to Bason (2018) scaling refers to guaranteeing the wide take-up of innovative new solutions across geography and time, and it depends on people. Moreover, even if a technological solution may prove to be successfully implemented in one organization, it doesn't necessarily mean that it is directly transferable to another.

In the study of Cinar et al. (2019) they identified 11 interaction-specific barriers which had a severe impact on organizations within the public sector. The identified barriers were lack of shared understanding, lack of effective network governance, inadequate communication and knowledge sharing between organizations, lack of involvement by essential businesses, funding, inappropriate accountability between organizations, network structure, 'turf fights' between agencies, lack of trust, different organizational competence and culture, and lack of mutual benefits (Cinar et al., 2019, p. 273). According to Daglio et al. (2015), changes need to be done when it comes to project management and service design. The traditional approach has been that changes come from the top, heavy reliance on contract in relation to stakeholders and that the service design entails the existing organizational requirements (Daglio et al., 2015). Thus, to cope with these barriers, the authors state that new work processes in terms of interaction and democracy are essential (Daglio et al., 2015; Cinar et al., 2019; Bason 2018; Kromidha & Córdoba-Pachón, 2016).

2.5 Research model

Because of IS and its evolution, researchers have developed various frameworks to structure, specify, and enumerate the objects of their studies. As presented in the previous section, various frameworks have been established within the distinct phases in the employment of cloud ERP

systems. To be able to structure and specify the study's objective, a research model which incorporates elements of the frameworks presented in the previous section has been developed. Based on the literature review, we see that factors that lead to an impact on adoption decisions are frequently classified as organizational and technological. We further see that environmental regulations play a significant influence in the acquisition stage for Norwegian PSOs. Within the implementation stage, we observed that the factors are classified into various segments such as organizational, technological, people, and extrinsic. As a result, we designed the research model displayed below. The goal of this model is to assist in identifying factors inside various stages, allowing us to gain a more comprehensive process perspective.

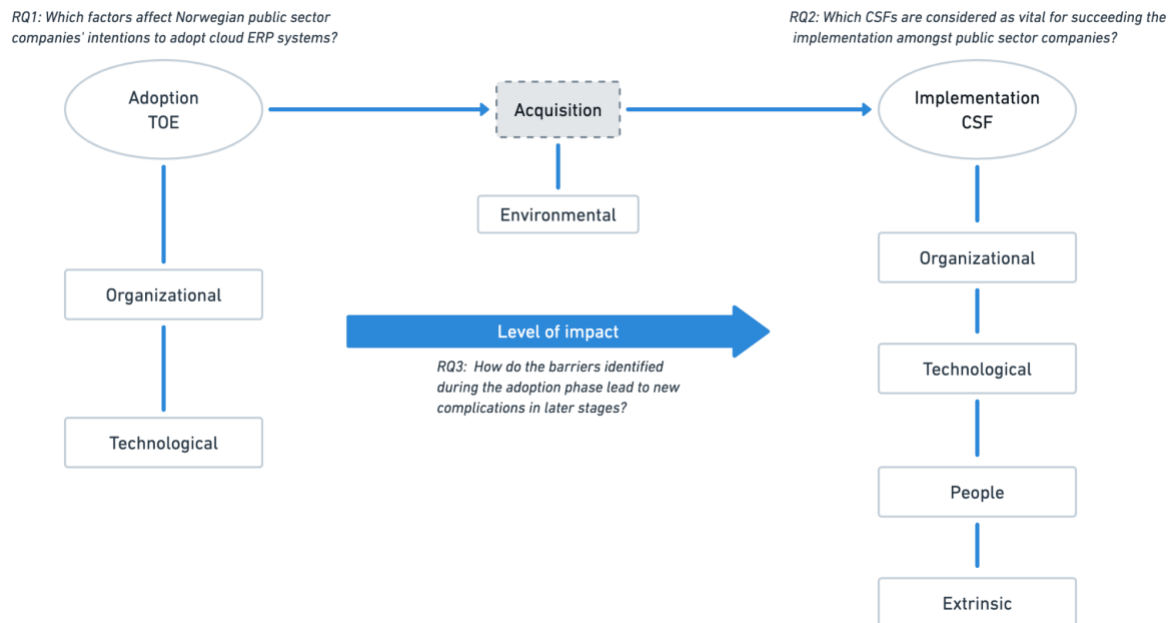


Figure 6. Research model: from adoption to implementation

As illustrated in the model above, different phases of the cloud ERP lifecycle will be examined. Even though the acquisition phase will not be investigated in isolation, findings from this phase are expected to occur given its nature within the Norwegian public sector. For the adoption phase, the model is structured according to the TOE framework by Tornatzky and Fleischer (1990). The implementation phase is structured based on the CSF framework by (Huang et al., 2021). To examine how early barriers may have an impact on the later stages, the nature of the barrier's framework by Cinar et al. (2019) has been utilized. Based on this, we will analyze and

compare the factors identified with previous research. While also providing practical guidelines that can aid PSOs in overcoming and avoiding disturbing barriers.

3. Research methodology

3.1 Research method

Because the goal of research is to create new knowledge, it is similar to everyday thinking. However, it differs from the way we think most of the time, because good research requires gathering sufficient and appropriate data, analyzing it, and then drawing well-founded conclusions based on empirical evidence (Oates, 2006). According to Creswell and Creswell (2018), there are three approaches to research, as we distinguish between qualitative and quantitative research, as well as mixed methods research, which is a combination of the two. Qualitative research is used to investigate and comprehend the meaning of individuals' or groups perceptions of social or human problems (Creswell & Creswell, 2018). The quantitative research approach aims to test unbiased theories by numerically examining the correlation between variables and is most commonly used to generalize and replicate findings (Creswell & Creswell, 2018). In this thesis, a qualitative research approach was chosen.

3.2 Research design

The overall approach to answering the research question is referred to as a research strategy (Oates, 2006). The different designs or strategies are various kinds of inquiry within the method approaches that can guide practices in a research study. These are frequently referred to as inquiry strategies (Creswell & Crewsell, 2018; Denzin & Lincoln, 2011). The figure below demonstrates an overview of the research process and the components as described in Oates (2006). The boxes highlighted in yellow interpret the strategy, data generation method, and data analysis used to carry out this thesis.

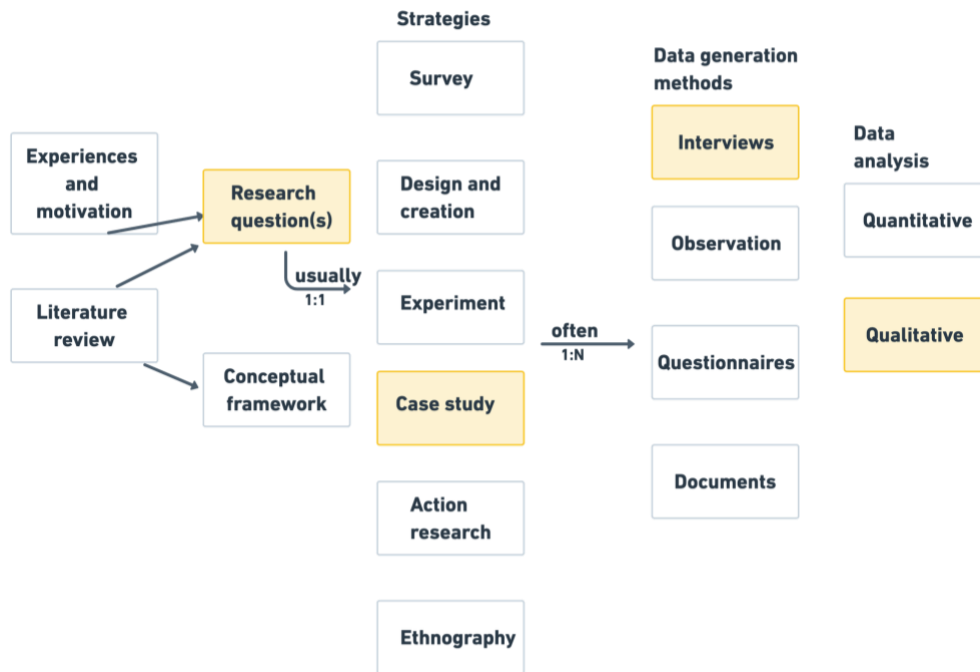


Figure 7. Model of the research process (Oates, 2006, p. 33).

3.4 Research strategy

3.4.1 Case study

Given that the goal of IS research is to study information systems in organizations, and that the emphasis has shifted to organizational rather than technical issues, the case study research method is particularly well-suited to IS research. (Myers 1997; Benbasat et al., 1987, p.8). The goal of a case study, according to Yin (2018), is to understand “the case”, what it is, how it works, and how it resonates with its real-world contextual environment. Furthermore, *choosing a case study may be convenient when (1) your main research questions are “how” or “why” questions, (2) you have little or no control over behavioral events, and (3) your focus of the study is a current phenomenon* (Yin 2018, p. 32)

Typically, only one case is examined. However, if a multiple case study is utilized, the researcher can look for similarities or differences between different cases and, in many contexts, include more persuasive evidence to the reader (Oates, 2006). A multiple-case study was employed to examine municipalities' intentions to adopt cloud-based ERP systems, the critical success factors of implementation, and how the barriers identified during the adoption phase led to new complications in later stages. According to Oates (2006), a multiple case study

approach takes more time to perform. However, since we are examining what is unfolding in the present, this study can be described as a short-term, contemporary study.

A common question in qualitative studies, according to Hennink, Kaiser, and Marconi (2016), is what determines an adequate sample size. Purposively selected samples are widely used in qualitative studies where information-rich sources are sought. Furthermore, rather than the number of participants, there is an emphasis on the quality and richness of the data (Hennink et al., 2016; Patton, 1990). One of the most widely recognized guiding principles for addressing adequacy in purposive sampling is saturation. According to Fusch and Ness (2015) when one has reached the point of no new data, there are also presumably no new themes. According to Francis et al. (2010), there are principles that can be applied to specify data saturation. With this in mind, we attempted to adhere to these principles. First, we decided on an initial analysis sample of five interviews as the absolute minimum. We saw it as beneficial to collect more data after the fifth interview, whereupon we interviewed two additional participants. After the seventh interview, no new insights or themes were introduced, and the sample was deemed adequate.

3.5 Data collection

The data collection process began early in 2022 and lasted until the end of April 2022. The secondary data used was gathered earlier, as it was acquired during the pre-project period. When conducting a case study, a wide variety of data generation methods such as interviews, observation, and document analysis can be utilized (Oates, 2006, p. 141). Interviews, according to Yin (2018), are an important source of case study evidence because most case studies are about human affairs or actions. As this study seeks to obtain detailed information, explore experiences, and ask questions that are complex (Oates, 2006), interviews were chosen as the primary data generation method.

When conducting interviews, there are three types to choose from: unstructured, structured, or semi-structured interviews. In this dissertation, semi-structured interviews have been chosen, as this allows the participants to speak more detailedly on the issues raised and introduce issues of their own (Oates, 2006). Furthermore, it provides the interviewer the possibility to change the order of the questions based on the flow of the conversation, as well as add additional

questions if the participant brings up issues for which the interviewer was not prepared (Oates, 2006).

In a case study, interviews are more likely to resemble guided conversations rather than structured queries. While it is possible to pursue a consistent line of inquiry, the actual stream of questions in a case study is more likely to be fluid than rigid (Yin, 2018). With this in mind, an attempt was made to follow the guidelines by Yin (2018) by formulating the questions by (a) following our own line of inquiry, and (b) verbalizing the actual (conversational) questions in an unbiased manner that serves the needs of our line of inquiry. The questions in the interview guide have been structured based on factors from the TOE framework as seen in Tornatzky & Fleischer (1990), the CSF framework by Huang et al. (2021) as well as the nature of barriers by Cinar et al. (2019). Furthermore, the questions have been influenced by meetings with the cloud ERP supplier, and previous research done on the adoption and implementation of cloud-based ERP systems. Lastly, due to the Covid-19 pandemic and the restrictions in terms of physical meetings, all the interviews were performed digitally.

3.5.1 Participants

At the beginning of the dissertation period, a supplier of cloud-based ERP systems within the Norwegian public sector was contacted to get a deeper understanding of the market, as well as getting recommendations of potential participants for the study who were either planning to adopt or had already implemented a cloud-based ERP system. Based on numerous meetings, potential participants were then reached out to and gathered.

As the supplier had a large network to which the researchers did not have access, it was desirable to ask for suggestions for potential participants relevant to the research topic. Thus, a purposive sampling technique (Oates, 2006) was applied. We were able to hand-pick participants who were likely to give meaningful data for the objective of the research by applying this sampling technique in collaboration with the supplier. Knowledge was acquired during the meetings with the supplier, which aided in the process of developing questions for the interview guide. However, as the object of the study is to examine the visions and opinions of employees within the Norwegian public sector, and not vendors, knowledge gathered from the meetings with the supplier will not be included in the thesis. As a result, citations from the supplier will be excluded from the thesis because they served as a source of market knowledge as well as access to potential participants.

For the selection of cases, the primary criteria were employees within the Norwegian public sector with knowledge of ERP, which were either planning to adopt or had already implemented the system. Considering the goal of the study is to examine different factors, which can include technological, organizational, and external, within the various phases of cloud ERP employment, various organizational roles and stages of the employment have been selected. Even though two of the participants work for a county municipality, they have experience with municipal procurements as well. A total of seven representatives from the Norwegian public sector were approached to participate, with varying levels of experience in technical, organizational, and leadership roles. The table below provides an overview of the participants.

Participant	Organization type	Role	Stage	Interview duration
Participant A	Municipality	Municipal director	Implemented	01:15:00
Participant B	Municipality	IT technical	Implemented	00:45:00
Participant C	County municipality	Section leader digitization	Tendering/acquisition	00:42:30
Participant D	County municipality	ICT system operation manager	Tendering/acquisition	01:20:26
Participant E	Municipality	Responsible for accounting	Implemented	01:05:00
Participant F	Municipality	Business manager digitization	Tendering/acquisition	01:12:00
Participant G	Municipality	Director of administration and service	Tendering/acquisition	01:21:00

Table 1. Participants within the Norwegian public sector

3.6 Data preparation & analysis

All the interviews were recorded and stored on a private hard drive by the consent of the participants. Audio recordings, rather than taking one's own notes, provide a more accurate rendition of any interview (Yin, 2018). Following the interviews, the tapes must be transcribed to facilitate the analyzing stage (Oates, 2006). Transcription takes a significant amount of time and energy to complete. Nonetheless, it is rewarding because it gives new life to the interview and provides the first real chance to start thinking about and analyzing the data (Oates, 2006). As a result, the recordings of the interviews were transcribed manually.

When the interviews were transcribed, the data analysis process began to display and organize the data following our research model. The purpose of data analysis is to search for patterns, insights, or concepts that seem promising (Yin, 2018, p. 215). This was accomplished by color-coding the data, which allowed for the identification and distinction of topics, as well as the examination of commonalities and differences. Furthermore, the color-coded topics and factors allowed for further subcategorization of the major categories, which could then be extracted into grid formats (Knafl & Webster, 1988). Thus, the data could be divided into different categories within the different stages of cloud-based ERP procurement.

After the data was coded and extracted into different categories, the cases were subjected to a cross-analysis, which enabled comparisons of the findings within the categories and the drawing of further conclusions based on these. Henceforth, in the following sections, the potentially contaminating differences and similarities among the individual cases will be presented and discussed, and the participants will be cited intermittently (Yin, 2018).

3.7 Ethical considerations

The researcher has an obligation to respect the rights, needs, values, and desires of the informant(s) (Creswell & Creswell, 2018, p. 287). The guidelines from NSD (Norsk senter for forskningsdata) were pursued to ensure the confidentiality and privacy of the participants. By adopting these practices, one can ensure that research ethics are followed and that participants are treated ethically. The project, including the interview guide, was reported to NSD for approval to ensure that personal and sensitive data was managed ethically, before beginning the interview process. The application included a consent to perform voice recordings of the participants, as well as how the data will be stored.

Before commencing the interviews, the participants were given a consent form. The consent form included information about the thesis, the interview, voice recording, and assurances that the participant's anonymity would be preserved. Appendix A contains the consent. To maintain anonymity, the participants are disguised with alphabetical letters.

The interviews were voice recorded using a smartphone in flight mode. These were kept on a private hard drive that only the researchers could access. Moreover, the participants were informed that they could at any time, withdraw their consent and ask for their data to be deleted.

4. Findings

In this section of the paper, the results acquired from interviewed participants within Norwegian municipalities and county municipalities will be presented. The similarities and distinctions of the findings have been acknowledged by structuring and analyzing the data. As mentioned in the previous section, a research model based on previous research frameworks was developed to structure the questions in the interviews, and thus the data collected could be classified into subsections within the various stages. In the adoption stage, the findings were structured based on the TOE framework (Tornatzky & Fleischer, 1990). Moreover, the findings within the implementation stage were structured according to the CSF framework by Huang et al. (2021). The main sections are 4.1 Adoption and acquisition, 4.2 Implementation, and 4.3 Early decisions impact on the later stages. Due to many arising perspectives within 4.1, it has been considered necessary to subcategorize the findings within this section.

4.1 Adoption and acquisition

This section presents the technological and organizational factors which influence Norwegian municipalities and county municipalities in their intention to adopt cloud-based ERP systems. In light of this, we seek to address the factors that influence Norwegian PSOs willingness to embrace cloud ERP systems, both favorably and adversely.

4.1.1 Perceived technological benefits

When asked what the motivation behind the adoption of cloud-based ERP systems was, the participants mentioned several factors. Participant A stated that *“It is a venue for more frequent, quicker, and more controlled updating from the supplier”*. A better venue for updates was also supported by participant E who explained that *“the updates will be delivered when they are supposed to be delivered. You do not wait in line for someone from a larger municipality”*. Even though the participant stated the importance of better updating procedures, participant E also emphasized that one of the main drivers of adoption was availability. *“Many employees in municipalities, particularly in health and education, do not*

sit in offices and work. As a result, they perceived it as a relief that one could sit on a tablet, or in the worst-case scenario, a phone, update software, approve invoices, and that it could be done immediately. Other systems have such solutions, such as apps, but they do not work as well as the cloud”.

All the participants mentioned system operation in terms of responsibility to suppliers as a motivational factor for adopting cloud-based ERP systems *“We do not want to have an on-premise system that we need to operate within the organization, because it necessitates a significant amount of effort. We want to reduce that aspect of our administration. Suppliers should have more responsibility”* (Participant C). Four of the participants also mentioned effectivization as a major motivational factor (Participant, A, B, E & F). Participant E made a clear statement on the subject: *“We are unable to calculate the cost of effectivization, but I am confident that the municipality saves hundreds of hours per year with a cloud-based system”*.

An additional motivational factor that was mentioned by one of the participants was covering the needs of the organization, as the participant stated that *“We strive to meet our own business needs. We want to be more cost-effective while also making it easier to support the work processes that we have. We never consider technology as a motivator for the decisions we make. It should be cost effective in terms of both management and operation, as well as maintenance and development”* (Participant F). Lastly, one of the participants described that the evolution of the systems has played a major part *“I must respond that this is what has been the development and that the suppliers, price, and security, not to mention that having cloud-based solutions is labor-saving to some extent. As well as in terms of updates, functionality, and overall service”* (Participant G).

4.1.2 Perceived technological barriers

When the participants were asked about the challenges regarding the adoption of cloud-based ERP systems, various factors were mentioned. Participant D addressed that there could be technical challenges in terms of integrating the cloud system with their existing systems. *“How should data from the cloud be delivered to our systems? We have everything from local AD to invoice reception that needs to be integrated”*. The participant further explained that one of the biggest challenges may be that they are giving away their control to the vendor: *“They process our data, and if there is an attack, our data may be compromised. We*

must ensure that the supplier understands what they are doing and is prepared to act if such incidents occur”.

Two of the participants mentioned the economical perspective as a potential challenge when it came to adoption. Participant C stated that *“the purpose is to move a cost from investment to operation. When you acquire a cloud service, you are leasing it”*. In addition to there being a change in the investment, the participant also added that *“in modern IT management, it is rarely an investment, it is simply an operational cost. That is challenging. There is also the issue that a cloud solution does not always result in a lower total cost”*. The cost perspective was also supported by Participant F, who added that *“the price perspective needs to be considered. How much does it cost? Moreover, the cost-benefit value must then be contemplated”*.

4.1.2.1 Data security

When the participants were asked about their thoughts on security, five of them (Participant A, D, E, F & G) emphasized that they were concerned about security. However, their answers were ambiguous. Participant E emphasized that as modern workplaces require accessibility to various systems from different locations, there will be possible security threats. Based on these reflections the participant further explained: *“I think that security is better in a cloud-based system. Vendors provide external services, and they need to be confident regarding security. Thus, I think they are more specialized in this than any IT department in a small municipality”*.

This was also supported by Participant A, who explained that the risk reduction aspect needs to be evaluated when determining whether they possess the necessary competence to manage data security on their own. *“When you consider the attacks that have occurred, we have nothing to put up with unless we have someone in the back who oversees both operations and security. Thus, I believe that data security is more reliable in a cloud-based model”* (Participant A). Participant B also added to the subject: *“traditional systems require internal back-up routines and storage of components. Thus, I believe there is minimized risk overall in the sense that you are less vulnerable to attacks when data is kept in a cloud-based system”*.

Two of the participants further underpinned that cloud-based ERP systems could improve data security as it could provide better control and reduce human errors. *“We believe that*

cloud systems provide better control and a more segmented solution, as there are no external dependencies that compromise security. Security will increase, as there is no reliance on parameter/external security which impacts other things than the applications you have”.

(Participant F). Participant G reflected more ambiguously, as the participant explained that *“I believe it is safer because the remedies are better suited to deal with security, and less vulnerable to human errors. I don't have a definite judgment about which is safer, other than that we make tremendous demands on the security of our systems”.*

The participants from the county municipalities further stress the vitalness of security, as well as initiatives. Participant C articulated that *“Nowadays, security is paramount. You must evaluate the safety of this by pushing it into the cloud”.* Nevertheless, the participant further adds that risk evaluation is required: *“We've retained some systems on-premise due to lower cost and more security”.* Furthermore, Participant D emphasized that: *“Security must be good, while providing features that enable retrieving of logs to see who has logged in, etc. Perhaps extra high security for those with higher access, such as administrators with a high level of oversight”.*

4.1.2.2 Customization

Within the context of standardized systems versus customized ones, the responses were rather ambiguous; *“there are pros and cons of everything”* (Participant D). Some of the respondents were very positive about standardized systems due to their diverse benefits. Participant A advocated that standardization enabled better practices, stronger management lines, and a better understanding of their public services. Also, Participant E considered standardized cloud-based systems as very profitable for the municipality as it increases efficiency through streamlining. The participant further added some “lessons learned” to the subject; *“We, like all other municipalities, have kindergartens, nursing homes, and schools. Why should we believe we are so different from others? No, standardization ensures that it works, because you'll know you can ask other municipalities with the same system how they addressed any problems. It provides you the ability to learn from their experiences to find good solutions”.* This was also recognized by Participant A who suggested that standardization freed the capacity to deal with other occurring challenges, while also enabling opportunities related to learning, collaboration, and information exchange, both internally and with other municipalities.

On the contrary, Participant F explained that it can be dependable on work processes: *“The use of systems varies widely depending on work processes. It is exchange and integration, and it occurs by specific standards, whereas work processes range from one municipality to the next. So, you can utilize a system in various ways, and build support systems around systems to use them in ways that are not typical”*. Furthermore, the participant explained that there is uncertainty about the actual existence of standardized systems: *“As far as I can tell, there are hardly any standardized systems”*. Moreover, Participant D noted: *“We may be lacking some functionalities if we use standardized systems. It always depends on whether we want to buy off-the-shelf solutions or have them customized”*.

Furthermore, when asked to what extent vendors provide proper customized solutions for the public sector, Participant G responded; *“Sure, at least in terms of the server and the core system. With software, you may notice that it evolved somewhat from the private market”*. It is further explained that some system functionalities remain unfinished and are more suitable for private sector sales companies. Also, it appears that some vendors struggle to fully comprehend the services required in the public sector. However, it is added that the major sellers are aware of their market and that it is a two-way street: *“Sometimes we do not notice either, since we do not realize the worth or expertise of the product they supply”* (Participant G). However, the participant further added that due to bad experiences with untested packages, they prefer validated products.

Moreover, when asked if it would be challenging to transfer historical data to the cloud, Participant D exemplified it with a recent advent in which their archive system was transferred to the cloud: *“Standardization is critical in such transfers, as it is vital to follow the existing standards to make the process more seamless. Conversely, if you have a really popular system that the majority can’t afford, it may generate lots of conversion and costs that have not been calculated”*.

4.1.2.3 Vendor lock-in

Participant A stated that one of the main drivers for their intention to adopt was that *“It is crucial for us to move to solutions that allow us to change our operating suppliers more freely”*. This largely implies that this municipality is unconcerned about being tied to a single supplier. However, it is further elaborated; *“The main advantage is that you get more flexibility into certain components of your value chain. On the other hand, because we opted*

to enter an unfinished product rather than an “off the shelf” solution, we are somewhat tied to them and the development path they pursue” (Participant A). Furthermore, when asked whether they perceived vendor lock-in as a risk, Participant G responded; “No, rather the opposite – it is easier to change with cloud ERP. You own your data, and you have protocols and mechanisms in place to ensure that if you switch systems, the vendor has sufficient time to send the required data”.

On the contrary, when asked about challenges or risks associated with cloud ERP, Participant F emphasized that PSOs should be aware of vendor lock-in. As this could play an important role in the functionality of the system: *“Many suppliers want to deliver everything into one system, which certainly complicates things as the system will be more tailored towards specific functions”.* On the other hand, Participant E explains that: *“There will undoubtedly be improved communication if you use the same supplier and system”.*

4.1.3 Organizational factors

The participants were allowed to reflect on the organizational elements that were decisive during the adoption stage. Participant E emphasized the importance of the organization's culture, as well as being able to assure employees that the transition to a new system is for the better. *“I believe it has a lot to do with foreknowledge. Why do we change, what adjustments do we make, and how does this impact our work? It's crucial, in my opinion, when making changes” (Participant E).* The importance of culture was also addressed by Participant A, who stated that *“Because digitization affects our routines, you must change behavior. When it comes to changing behavior, attitudes and values are key. You cannot change a person's value as it is fundamental. However, you can change attitudes, which in turn change behavior. Thus, I believe that the culture is essential” (Participant A).*

Leaders may have a great impact on a company's culture, and all participants mentioned top management support as imperative when it came to adoption. This was clearly described by Participant E who stated that *“if you can't get the leaders on board, you'll have to find something else to do”.* Although all participants agreed that top management support is essential, this does not necessarily imply that they must be heavily involved in the process. Participant F explained that *“the management has a broader range of support mechanisms than the users who use it daily. It is critical for management to be present, but not in detail. More on a strategic level”.* Lastly, one of the participants justified that there has been a

general expectation towards digital maturity within the public sector coming from the top management over a longer period *“Looking back over the last ten years, there has probably been an expectation from the municipal director to the central political leadership that one has faith in cloud solutions”* (Participant G).

4.1.3.1 Communication

Four of the participants stated the importance of communication and information in embracing all employees on board with the transformation. *“In my opinion, you cannot over communicate. So, we had a really good dialogue with all of the user’s way in advance. Good communication, as well as information, information, information, is key”*. (Participant E). Participant A elaborated on the subject and added: *“The organization must be prepared for the fact that we are about to change, which will necessitate major effort. And, to do so, we must ensure that everyone in the organization understands what tools we have, such as what type of IT infrastructure or architecture we have”*. The importance of communication was further emphasized by Participant D, especially in terms of collaboration between departments: *“it is decisive that HR and IT communicate with one another. Otherwise, it may cause issues later on when we divide into groups and decide who should have access to which data”*.

4.1.3.2 IT-Expertise & competence

In terms of knowledge of cloud-based ERP systems, some of the participants shared their thoughts on the competence within the municipalities. Participant B stated that *“We see that, like society in general, we are lagging in terms of digital competence. In a larger organization, there is a large age range”*. One of the participants reflected more upon the subject, particularly in terms of the users of the system. *“I would say they are unaware of it. When they log in, regardless of the system, they probably believe that it is a cloud-based solution”* (Participant D). This was supported by Participant C, who said that *“The interface remains unchanged. When the user logs in to the browser, it makes no difference whether it is local or in the cloud. I don’t think it’s that important for the users”*.

On the other hand, Participant C further explained that when it came to the employees within IT operations, there will be a different approach. *“Those with competencies that were important 10-15 years ago are no longer relevant. However, expertise in cloud and azure security, AD, and so on has become much more important. As a result, there must be a*

competency shift within the IT department” (Participant C). However, this shift has revealed issues related to nowadays recruitment processes: “Attractive workers, e.g., those with cloud security expertise, come and leave more frequently than others” (Participant C).

Further, participant A perceived cloud ERP as an initiative to mitigate the risk of internal competency loss: *“It becomes increasingly difficult for those of us who live outside the major cities to gain digital competency. We are privileged to have two ICT engineers, yet we are still very vulnerable” (Participant A). Participant C complements this by stressing; “Small municipalities lack the IT expertise required to safely solve these complex tasks. Few municipalities can accomplish this alone, therefore they join ICT collaborations or purchase services from suppliers. Small municipalities can no longer function on-premise, as they are not able to deliver sufficient quality”.* Participant A contextualizes this in terms of security: *“It is the risk reduction aspect that we must evaluate when deciding whether we possess the necessary competence to manage data security on our own. Given the recent attacks, we lack the capabilities to respond. We necessitate a provider who is responsible for both operations and security. Thus, I believe cloud-based modeling is more secure than local servers”.*

4.1.3.3 Resistance

When asked if they met any resistance to the adoption from the system users, all of the participants underlined that some individuals will always be resistant to change. However, two of the participants asserted that there is confidence in those in charge of the procurement. This was addressed by Participant C, who stated that *“in Norway, we have a lot of faith in our suppliers, and while we may be naive, we probably don't problematize as much as other countries. With the trust or naivety that we have, our users believe those who work with procurements, IT operations, and management know what they are doing”.* This was further supported by Participant A: *“Nobody knew what we were getting ourselves into, and when no one knows, it's difficult to resist”.*

Though the participants stated that there was little resistance from system users, some of the participants elaborated that different departments of the municipality could be resistant to adoption. *“In IT operations, I have encountered resistance to moving to the cloud due to security concerns, but it is evident that those who currently operate it are skeptical that they will no longer be the ones handling it” (Participant C).* This was also supported by Participant D: *“The only critical ones are those handling security. Assume, for example, that*

my sick leave goes awry. That is most likely what can be harmful about using an outside operating provider”.

4.1.4 Environmental context

In this section of the paper, the environmental factors will be addressed as a result of the laws and regulations in the Norwegian public sector which require them to go through public tender procedures. In addition, the findings from the competitive environment will be presented.

4.1.4.1 Regulatory environment

Because public procurements are regulated in Norway, the participants were able to consider sociopolitical aspects of the adoption. One of the participants explained that the initial stage of adoption is because the law requires it: *“We never change the system just for the sake of changing it. We change it because the public procurement law requires it. You must go out to tender on occasion”* (Participant C). This was also supported by Participant B, *“We used a type of state standard agreement in which there was a specific type of plan matrix within ERP. Thus, we could organize the plans based on what needs to be emphasized and then compare the suppliers”*.

Participant E also elaborated on the standard agreements, stating that they are valuable, but emphasizing that the agreements alone are insufficient: *“The government's standard agreements, such as SSA-O and SSA-T are the ones we use. They are enforcers of following the laws. They are the dividing line in terms of how to handle implementation. They are, however, very general”*. The participant further explained that what the attachments entail, is what is important: *“You add attachments to the agreements, and what is displayed there is crucial. As there are specific details”*. Further, two of the participants underlined the specifics of the attachments: *“We can add information about how the supplier's data should be structured and who should have access to it. Can people from the EU or from outside the Nordic region access the data? It is vital to know where the data is stored”* (Participant D). Participant F also elaborated on the location of where the data is stored, which is somewhat unclear in the law: *“When it comes to data storage outside of Norway, the Accounting Act is quite strict. There is a minor inconsistency between the regulations and the law. The law states that it must be listed for 3-4 years in Norway, but the regulations state that it can be listed in the EU. It will be a legal evaluation, which we will clarify with lawyers”*.

4.1.4.2 Competitive environment

Some of the participants also reflected on industry-specific concerns in terms of market competition and development. Participant F stated that: *“when it becomes too established, such as with obsolete on-premise systems, it creates a monopoly that entails limited development”*. Participant A also elaborated on the topic, giving an example of when they were going to acquire an HR system, where in the middle of the acquisition process their selected vendor was bought by a larger competing supplier, which led to their primary supplier being thrown out of the agreement as they were competing on financial systems. Further, the participant explained that: *“It should have been possible to use applications across vendors, but I understand that this will destroy the bottom line of many of these companies - and that we will end up having monopoly situations. However, these kinds of changes harm us”* (Participant A).

Lastly, one of the participants stated that the huge and unclear tenders can cause development uncertainty: *“In certain ways, there is a monopoly in terms of definition and delivery, which is undesirable, as it impedes the development and potential of entrepreneurial technologies”*. The participant further added that: *“Will something be purchased on a national scale? Should DFØ (Directorate for Administration and Financial Management) invest in a public sector ERP system? In the long run, there will be uncertainty in the development, implementation, and operation in X number of municipalities and businesses”* (Participant F).

4.2 Implementation

This section will present the factors that municipalities and county municipalities in Norway perceive as critical for a successful implementation. Both intrinsic and extrinsic factors are taken into consideration.

4.2.1 Selection of vendor & business process alignment

The participants got the opportunity to reflect on their vendor selection as well as how the system aligned with their business processes. Participant E explained that cloud-based and price of the system were the criteria that they ended up discussing in the selection process. *“It was a competition between two suppliers. One could deliver cloud-based immediately, while the other stated that it was mostly cloud-based and that the rest would be developed over time”* (Participant E). The participant further explained that the reason they chose one supplier over the other, was because they could deliver a cloud-based solution right away.

The importance of the supplier meeting the municipalities criteria was further highlighted by Participant A, who stated that: *“With our goal of taking the organization one step further by only having to store data once, as well as all of these digitization points that we have been very clear on, there was only one supplier that could fulfill it all”*. The participants further added that price was not a decisive factor, but rather the system quality and functionality (Participant A & E).

Two of the participants elaborated that it is critical for municipalities to make that transition now because there is a cultural shift and that suppliers in many ways will force it. *“They will initially push you towards cloud-based solutions by adding intensives, which includes cheaper, better, new versions earlier, and a higher level of SLA. In the next round, they will simply stop supplementing new updates and versions. As a result, it simply stops, which is something you cannot live with”* (Participant C). Participant F also elaborated on the suppliers and their development, and that *“There was some skepticism about switching to cloud solutions earlier, but now the trend has become that we demand cloud solutions both for ourselves and where we collaborate with others. That has been the development, suppliers, prices, and security have all improved”*.

Some of the participants also reflected on the importance of the system aligning with their business processes. *“We require a system that generates automatic invoices, reminders, and debt collection notices. It is our aim that this involves as little work as possible”* (Participant C). Participant E elaborated on the fact and added that: *“We've gone from 60 percent to 99 percent eInvoices. We have been provided reminder routines where the customers will be reminded. There are many kinds of goals that we have achieved, that the system has helped us with. Our primary goal of streamlining and reducing manual labor has been met”*.

Participant A also underpinned that their system has proved to be helpful in some areas *“We are beginning to notice that the quality of what we deliver has improved noticeably with the tools we have received in the areas where we had nothing”* (Participant A). However, the participant further stated that there were still parts of the delivery that were not satisfying as of yet: *“In areas where we had old financial systems, the quality of e.g., salaries have deteriorated slightly on reporting and data transfer. As a result, I am still waiting to withdraw the rewards that the supplier suggested we should”* (Participant A).

When it comes to investing in cloud-based ERP systems, three of the participants expressed the concern that the suppliers' solutions may be tailored more towards the private sector (Participant A, C & G). *"You can see that the software has been developed somewhat from the private market. Some are unfinished and better suited to the types of sales organizations found in the private sector"* (Participant G). Participant A agreed on the matter in terms of their supplier and added: *"That is not unique to that provider, in my opinion. My colleagues face far more difficult challenges than we do with our supplier"*. This was further explained by Participant C, who stated that: *"The issue is that there are not that many suppliers in the public market. Consequently, there is little competition and slow development"*.

4.2.2 Vendor communication

When asked what was critical in terms of implementing the system that they desired, several participants mentioned communication with the vendor as fundamental. *"Communication with the supplier is critical, as is taking the necessary time. They are the ones who are familiar with the system. We have no idea how things should be constructed"* (Participant E). This was also supported by Participant F, who stated that *"It's important to define which needs are to be met and identify and clarify what the delivery is to cover both internally and with the supplier"*.

Some of the participants also emphasized that clarity was important when communicating with the vendor. Participant A explained that *"there are still some components that aren't in place, which causes a lot of frustration, so they need to be clear about what they promise"*. This was further supported by Participant G, which said that *"When specifying requirements, you may have some ideas about what you presume to be the need, and then the supplier may have an idea about how it can be solved differently. Thus, it is important to be open in the development process"*. Lastly, participant C stated that *"It is critical to have a clear agreement, a clear request, so that both parties agree, to have a successful implementation. One wishes to avoid unpleasant surprises"*.

4.2.3 Training of users

In terms of system implementation, all participants mentioned the importance of training users to become familiar with the system. *"People must be able to use the system if you want to generate profit. In one municipality, for example, a transition to a new system resulted in a 4-6 weeks increase in case processing time. That should not be the case. The new system is*

probably better, but if they are unable to use it and devote sufficient time to learning, it is a failure” (Participant C). Participant F further added to the subject, stating that: *“To avoid complexity, I believe it is critical to invest in training and the preparation of work processes. Specifically, the volume of work processes”*.

Though the participants agreed on training being vital, there were different approaches to how it should be done. *“The amount of time we devote to training varies significantly. In general, we meet on Thursdays and have a learning culture that includes a diversity of topics. Nevertheless, it is crucial to involve those who are considered necessary early in the process”* (Participant B). This was also supported by Participant E: *“When it comes to preparing the first-line users, which is our municipality’s accounting department, they must have a lot of information and training beforehand”*. Furthermore, Participant A added: *“We must ensure that those who are affected are allowed to participate as early as possible. We have developed a digitization strategy which includes the establishment of a forum, where we can gather an understanding of everything we do as an organization”*. Lastly, Participant C stated that: *“Introducing users to the system is an expensive and time-consuming process. It should not be underestimated. Early involvement is important, but training people for a system that will be implemented in half a year is not convenient”*.

Two of the participants also explained that the Covid-19 pandemic had an impact on their training routines and that they had to adjust accordingly. *“We had bad timing with the Covid-19 pandemic, so the training was a bit mediocre. We held courses through Microsoft Teams, which was helpful at first. Now, gradually, I’ve attempted to travel to the users and demonstrate how to do things”* (Participant E). This was further supported by Participant G, only that they saw it as advantageous: *“With the pandemic, we had to turn around and do all our training online because it was inconceivable to do so in person. It proved to be far more effective. We will continue to use this model in future implementations”*.

4.2.4 Project team & management

Four of the participants expressed the importance of having a dedicated project group during the implementation phase, as it is important to have collaboration between the relevant departments (Participant B, D, E, & F). Despite their dedication to a project group, some of the participants expressed that they could have made adjustments: *“We were too few people, and we lacked the necessary resources. In my spare time, I worked on this. I believe that in*

the end, we were forced to use a type of project portfolio in which we simply ended up with copy paste” (Participant E).

The municipality of participant F had a similar issue, as they lacked technical competence when initiating the project. However, they were able to buy expertise in connection with procurement: *“A company that assists with public procurement aided us in the technical process. They've done similar projects before, so we could look at their previous projects and use them as a reference point. They collaborated with our project manager, who had a dialogue with the supplier” (Participant G).* Furthermore, the participant explained that one major issue in general when it comes to public procurement is that one believes that after you buy a product, the project is finished. *“In accordance with digitization, the project does not begin until the product has been obtained. But what usually happens when one gets there is that the resources are finite, and people are exhausted” (Participant F).*

Two of the participants also emphasized the importance of having a competent project manager, who can keep the thread, plan, and maintain good contact with the supplier. *“We had a very skilled project manager when we introduced the case management system. I saw a lot of value in it and put myself on the same template when it came to introduce the new ERP system. I almost ended up copying it, as it was a huge success” (Participant G).* This was further supported by Participant D, who added: *“It is critical to have a project manager who is connected to various professional environments in such a large project”.*

4.2.5 IT-infrastructure & system functionality

In terms of IT infrastructure, two of the participants perceived cloud-based solutions as advantageous. Participant F stated that: *“Managing your system is becoming increasingly complex, and by choosing a cloud-based solution you will be able to reduce the complexity and reliance of IT infrastructure”.* The participant further added: *“We make demands regarding how the supplier manages the infrastructure”.* This was also supported by Participant C, who explained that: *“If it is external, it is easier to contact them and inform them that there are some issues that need to be resolved. Instead of having a local solution, where they will have to get remote access to us which can pose a security risk”.*

What might be challenging is the network infrastructure, which two participants mentioned as something that needed more attention. Participant G stated that: *“The ICT department among*

us must place a greater emphasis on ensuring that the network is operational and stable”.

Participant F also elaborated on the topic and explained that they were exploring solutions to enhance their network further: *“We currently operate on our own, but we are considering purchasing networks as a service. As of today, 4G and 5G are purchased as pure services. There is nothing that restrains it from being the future of all devices, considering the internet should be a mainstay of everything”* (Participant F).

Two of the participants stated that good planning early in the process, both internally and with the vendor, is the solution to gaining system functionality: *“To make the transition work, you must specify how you want it to be. We have nine integrated systems which should communicate with accounting”* (Participant E). Participant D aligned with this and stated that *“It is vital that the supplier has clear guidelines for how this should be performed and how it can be solved”*. Despite stating that it is important with clear guidelines from the vendor, Participant D does not see too much difference in terms of infrastructure compared to on-premise: *“There are many of the same integrations that must be set up, and it may even be slightly simpler with cloud-based”*.

Three of the participants did however share their concerns regarding integrations, Participant C explained that if the supplier delivers an older system, it can lead to difficulties: *“If the cloud system is of the SaaS variety, which is on-premise and hosted by the vendor, then there's the possibility that it uses outdated transaction technology, making integrations more difficult”* (Participant C). This was further supported by Participant G, which stated that *“The challenge is that we rely on the systems communicating with one another. The billing system needs to be able to communicate with the nursing and care systems”*. Lastly, Participant A added that: *“in practice, we should be able to transfer the entire data warehouse to a new suite. But I can't say I'm 100 percent certain that we are”*.

4.3 Early decisions impact on the later stages

When the participants were asked if early decisions had an impact on later stages, all the participants emphasized that there was a link between the phases and that there were various factors that could be the cause. *“What commences early in the process is what should be resolved at the end. One needs to have good communication between users and management in advance, but also good communication with the supplier along the way”* (Participant E).

Four of the participants expressed the importance of having a solid contract, as it is the foundation for how the implementation will be resolved in many ways (Participant C, E, F & G). Participant E stated that: *“In a way, it never gets good enough. To improve the agreement, it is necessary to interact with others. Consult with other municipalities. Gaining insight into their experiences can be beneficial”*.

This was also supported by Participant G, who added: *“The procurement process itself necessitates precision. We have previously encountered issues where, among other things, supplier requirements were not clearly communicated”*. Participant F further added to the subject: *“One needs to have control and describe the processes that the system should support. There will be issues if there are things that should have been solved but were not specified as requirements”*. Participant C then emphasized that, while having a solid contract is important, it is also highly dependent on the supplier: *“In my opinion, if you have a good supplier, you do not need to use the contract. Because then both the customer and the supplier have the same fundamental approach to the delivery”*.

Three participants expressed the importance of having the whole process in mind when initiating the procurement, to prevent an unpleasant result when the system is up and running. *“You must consider the majority of factors, including how to use the new system, how the transition works, and not least, how to phase out the old system”* (Participant D). Participant F further explained that it is important to plan the budget for all of the phases: *“It is critical that you budget for more than just the cost of the product. I believe that many organizations make this mistake when budgeting during the acquisition phase, leaving no funds for management and further development afterward”* (Participant F). This topic was also emphasized by Participant A, as they experienced this in practice: *“We had to include a time registration system in the suite we bought. This application was not part of the suite, so it had to be added. It cost an extra half a million just to get this in”*.

Some of the participants mentioned involvement as an important factor to avoid displeasing incidents in the later stages (Participant A, B, D & F). Participant B stated that: *“It is critical to include all stakeholders early on. Who is affected, and who is not? And plan according to what works best for the organization”*. Participant F also elaborated on the matter and specified who it is important to involve: *“A combination of expertise in IT architecture and business architecture is required. There is a mix of business, IT, technical expertise,*

digitization, and change management". Participant D then underpinned the importance of having IT involved: *"It is vital that you are represented by the right people, who are aware of and consider potential issues. Then you will be able to avoid barriers. IT should be involved early, even though they are not the ones that will be operating the system"*.

One of the participants also mentioned that collaborating with other municipalities in the process of procuring a new system could lead to complications later on. *"We collaborated with several other municipalities in the acquisition of a new case processing system. If we had sat there alone, we would probably have chosen the cloud solution. But to get all the municipalities on board, a compromise was reached. Thus, we ended up with an on-premise solution"*. Furthermore, the participant added that: *"In retrospect, we in the larger municipalities are probably a little irritated that we did not force it through"* (Participant G).

5. Discussion

In this section, the findings will be discussed with the previous research presented in the literature review section. Our thesis has identified a varied assortment of factors that can influence the willingness to adopt. The results reveal that certain perceived benefits and barriers relate more to particular municipalities, whereas others apply to several. For the implementation stage, we have identified a set of CSFs that representatives from the different PSOs consider vital to overcome distinct challenges. Furthermore, we will attempt to answer the presented RQs. Hence, the discussion has been divided into three main sections: 5.1 Adoption decision and acquisition, 5.2 Critical success factors for implementation, and 5.3 Dynamic nature of barriers between different stages.

5.1 Adoption decision and acquisition

This subsection will address the RQ1 which comprehends the benefits and barriers that Norwegian PSOs consider when defining their system requirements before procurement within the acquisition phase. As presented in Figure 6. The acquisition phase is between adoption and implementation. However, given the regulations, the environmental context (Tornatzky & Fleischer, 1990) will be discussed within the acquisition phase. Initially, the respondents perceived benefits will be presented along with theoretical findings. Second, their view on barriers related to cloud ERP will be evaluated to validate the extent of concerns related to each barrier. The purpose of this is to identify the level of impact each factor has on the decision to adopt, either positively or negatively. Accordingly, these will be presented in line with the TOE framework (Tornatzky & Fleischer, 1990).

5.1.1 Technological factors

Based on our findings we observe that all our respondents from the municipalities mention availability as an essential motivator toward adoption of cloud ERP. This aligns with results from Sædberg and Haddara (2016). On the contrary, results from the county municipality provide little evidence to corroborate the influence of availability. Further, faster upgrades/maintenance was considered a key benefit likely to influence the adoption rate positively. Moreover, system updates may assist organizations through reduced costs, standardized system versions, increased concentration on work tasks, and facilitated knowledge exchange (Bjelland & Haddara, 2018, p. 21). Due to such advantages, four of our respondents recognize easy access to up-to-date software and reduced responsibility in terms

of system updates/upgrades as an essential driver for adoption. This is highly reflected by Swedish municipalities, which consider quick access to standardized up-to-date software with a focus on versioning, as a key opportunity provided by cloud-based IS (Ayele & Juell-Skielse, 2015). Also, Alsharari (2020) shows that clients have experienced cloud ERP that updates continuously to solve bugs and technical issues.

Further, all participants stated that cloud ERP was an incentive for them in terms of decreasing their obligations related to system operation and maintenance. Accordingly, there appears to be some correspondence in terms of allocating more system responsibilities to the vendor. This aligns with prior research demonstrating that adopting firms obtain a return on investment (ROI) associated with enhanced flexibility of IT assets, as vendors maintain and administer cloud ERP systems (Chang, 2020). Hence, the SaaS pay-per-use model offers cost savings (Chang, 2020), such as IT expenses linked to e.g., maintenance that entails increased cost-effectiveness and financial performance (Alsharari, 2020). Two of the participants emphasized that the economic perspective may be challenging in terms of moving the cost from an investment to an operational cost. Although reliable cost-efficiency statistics are lacking, one of the participants is certain that their deployed cloud ERP has resulted in a beneficial outcome. This is consistent with case three from Jones et al. (2019) that experienced cost savings equivalent to £900k. However, in the absence of a comprehensive post-implementation value and benefit assessment – these calculations can't be completely trusted (Jones et al., 2019). Nevertheless, it provides indications of why cost-efficiency is considered a huge motivator to adopt cloud solutions.

Data security is widely recognized as the main challenge of cloud ERP, as it represents major risks and concerns related to privacy and transparency (Mattison & Raj, 2012; Peng & Gala, 2014; Elmonem et al., 2016; Saa et al., 2017). As a result, several researchers have predicted security to be a top barrier that both impedes adoption, and fosters hesitancy and skepticism toward SaaS services, such as cloud ERP (Kuiper et al., 2014; Ayele & Juell-Skielse, 2015; Sædberg & Haddara, 2016; Lee, 2019). However, these arguments appear to be unaligned with empirical evidence from Nordic PSOs. E.g., Swedish municipalities ranked it as the 5th challenge (Ayele & Juell-Skielse, 2015), and Norwegian public sector representatives ranked it as the 4th challenge (Sædberg & Haddara, 2016).

On the contrary, while our respondents are genuinely concerned with data security, our data indicate that security is not a direct hindrance to adoption. More intriguingly, data provide indications that firm size does influence cloud ERP adoption (Sædberg & Haddara, 2016), especially with regards to the security aspect. This is reasoned as small municipalities lack the digital competence to operate security sufficiently on their own. Hence, cloud-based security functionalities are almost considered a motivational driver to adoption. This corresponds to the NSUCS which underpins that in many circumstances, resourceful cloud vendors can provide better security than many smaller enterprises can manage (Sanner, 2016). Also, it supports previous research stressing that SMEs are generally less concerned with security than larger organizations (Johansson et al., 2015), also in the public sector. Thus, clients appear to have developed trust in their vendors' services. This supports the study of Alsharari (2020), who suggests that security issues are due to inefficient warrants by vendors, rather than the system itself. Nevertheless, the county municipal's business strategies and objectives intend to move software applications to the cloud. Hence, our analysis suggests that while most respondents recognize data security as a paramount concern, they prefer cloud solutions for various reasons. E.g., lack of internal ICT competence, the societal direction, and vendor prioritization regarding future development.

According to Sædberg & Haddara (2016), lack of customization within a system is seen as a fundamental shortcoming. One of the participants emphasized that by having a standardized system, they may be lacking some functionalities. In the study of Elmonem et al. (2016), they found that customers often need to design or customize system functionality to meet their business requirements. This was supported by one of the participants, who explained that work processes differ from one municipality to the next and that standardized systems hardly exist. On the contrary, another participant underlined that the commonalities between public services provided by different municipalities facilitate the development of standardized systems that allow them to interact and learn from each other's experiences. This was also recognized by another participant, who expressed that standardization permits increased capacity and collaboration opportunities that allow for information exchange between municipalities.

In similarity, some of the participants did express that standardized systems were more favorable compared to customized ones. The participants suggested that by using a standardized solution, they could ensure that the system would function because it had

previously been tested. Furthermore, in instances when you wish to transfer historical data, one of the participants suggested that a standardized approach would be highly essential, as it ensures that existing standards are followed. This is consistent with the findings of Ahn and Ahn (2020), who discovered that because each country's atmosphere is different, customization concerns may differ from one country to the next and that it does not always have to have a significant negative influence on cloud-based ERP adoption. The results indicate that the participants perceive standardization as a greater advantage than customization. This is largely due to stimulating benefits such as increased efficiency, quality, collaboration, and capacity to cope with other challenges.

Within the current literature, vendor lock-in has been widely recognized as a vast concern (Peng & Gala, 2014; Elmonem et al., 2016). It is also regarded as the most significant issue, posing a substantial barrier to the adoption of both cloud-based IS (Ayele & Juell-Skielse, 2015), and cloud ERP (Sædberg & Haddara, 2016; Ahn & Ahn, 2020). Few of our participants mentioned it as a concern when asked about risks and challenges with cloud ERP. One of the participants explained that having one supplier delivering everything into one system could cause issues in terms of overall functionality. However, one of the participants neglected this by stating that having the same supplier and system would rather enhance communication. On the contrary, two of the participants responded that they believed it was easier to switch vendors with cloud ERP due to data ownership, as they will be able to transfer their data warehouse to a different suite if desired. However, one of the respondents added that they were not 100% certain that they had that opportunity. Nonetheless, it was highlighted that if they (or another municipality) found themselves in a situation where they did not possess their data; *"you have truly lost the transition to the cloud"* (Participant A). It appears that the respondents that are in the adoption/acquisition phase are more conscious in terms of choosing the vendor that meets their business objectives and system requirements. Thus, Norwegian PSOs seem to be aware of variances regarding service quality in their vendor selection process (Peng & Gala, 2014).

5.1.2 Organizational factors

The literature shows wide inconsistencies regarding the actual influence of organizational culture on cloud ERP adoption. For instance, Korean firms acknowledge the necessity of sustaining a collaborative, open, and tolerant culture to succeed with cloud ERP adoption (Ahn & Ahn, 2020). Which is certainly not recognized by firms from Saudi Arabia (Albar &

Hoque, 2017). However, patterns in our findings seem to be more aligned with Korean firms. Data shows evident alignment in terms of change management and providing employees with adequate information that shapes attitudes to corporate objectives. Accordingly, leadership can have a great impact on organizational culture. In light of this, it was reasoned that substantial changes were possible because of the high degree of staff commitment and loyalty, even when confronted with barriers that encouraged opposition. It was further noted that this could have been more difficult in a larger municipality where people can more easily swap occupations. These findings strongly endorse the general perception regarding the vitalness of top management support in both general SaaS, and cloud ERP adoption. For instance, Peng and Gala (2014) consider inadequate top management support as a failure triggering factor in both on-premises and cloud ERP adoption, able to e.g., demotivate staff and generate cultural barriers.

In terms of IT expertise and knowledge, results provide indications that the municipalities are lagging in terms of digital competence, and that they have seen a drastic alteration regarding the IT competency required today versus 10-15 years ago. Data from a larger municipality shows that they recognize the need to cultivate more internal security competence that can manage local servers, software, and routines. However, analysis reveals issues with nowadays recruitment as the attractive workers, e.g., those with cloud security expertise, come and leave more frequently. It appears to be even more challenging for small municipalities to attract and retain IT personnel. Due to this, they largely depend on vendors that can provide reliable solutions in terms of operation, security, updates, and maintenance. Hence, it appears that the lack of IT competence in smaller PSOs increases their motivation to adopt cloud ERP.

5.1.3 Environmental factors

In Norway, the public sector organizations are naturally regulated by the government, while also following closely the initiatives originating from KS. When purchasing new services which are estimated to be NOK 100,000 or more, they need to participate in an open tender competition (Regjeringen.no, 2018). This was acknowledged by one of the participants, who stated that there is never any swapping of systems just for the sake of changing it, but rather that the law works as an initiator and requires them in doing so.

According to Sanner (2016), Difi has created a set of architectural principles which serve as standard guides when it comes to public-sector ICT activity. Two of the participants emphasized that the standard agreements that they used were valuable in terms of specifying their plan for the procurement and being able to compare suppliers based on these. However, three of the participants did explain that the standard agreements work as enforcers of following the law, but that they are very general and thus in isolation are not sufficient. Hence, to be able to specify the specific details on the procurement regarding system requirements, the participants elaborated that it is important to include attachments that can further go into the details of their request. One interesting discovery was also made by one of the participants, as the participant explained that there is any inconsistency between the regulations and the law in terms of data storage outside of Norway. As seen in Jones et al. (2019) data ownership rights need to be clearly defined in the service contract to ensure an establishment of data privacy and trust.

The environmental context also contains the competitive environment (Ahn & Ahn, 2020). Although there is no competition between the PSOs in terms of procurement, the suppliers will need to compete to be able to deliver to a specific customer. Some of the participants shared their concerns in terms of the market becoming too established, which can lead to a monopoly situation. Moreover, one of the participants gave an example of a procuring process where a vendor was bought by a larger competing supplier, which led to them missing out on a certain application. Henceforth, suppliers must involve and educate the PSOs on cloud-based solutions (Sallehudin et al., 2020) in a matter that allows the PSOs to have an internal awareness that mirrors their ability to make business decisions that aligns with their needs (Salim, 2013).

5.2 Critical success factors for implementation

RQ2 will be addressed in this subsection by investigating the encountered barriers, as well as the precautionary measures, are taken to resolve them. The goal is to discover CSFs that can ease the deployment process for PSOs wanting to migrate their ERP system to the cloud.

5.2.1 Selection of vendor & communication

Compared to the traditional systems, the vendor selection process for cloud-based solutions may be even more comprehensive since organizations must relinquish their control to the vendor. According to Gupta and Misra (2016) selecting the right supplier by the type of work

a company wants to do is critical. Three of the participants acknowledged that their choice of a vendor was based on business processes that could be automated and enhanced by their selected vendor. While three of the participants emphasized the business suitability of the systems, two of the participants also explained that this has been the trend and that vendors now are more capable of ensuring data and information security as well as compliance norms (Gupta & Misra, 2016). However, in terms of vendor development, three of the participants explained that the supplier's solutions still are more tailored toward the private sector and that this can be a result of little competition and slow development.

In the study of Mahmood et al. (2019) they discovered that the selection of vendors plays an important role in the successful implementation of the system and that it is important that both the organization and supplier recognize the importance of collaboration. Some of the participants elaborated that their system had given them business advantages and helped them in reaching their goals. Nevertheless, three of the participants explained that the suppliers need to be clear in their communication, so both parties acknowledge what the system is supposed to deliver. Researchers found that if issues were not understood by both the customer and vendor, the ERP system could not provide a solution to the organizations and that a cordial relationship was vital (Ganesh & Mehta, 2016; Jones et al., 2019). One of the participants had experienced that there were missing components within their system and enquired that this had led to annoyance. Thus, the findings indicate that having an open and clear interaction is vital, as a lack of shared understanding, inadequate communication, and knowledge sharing between organizations can act as a barrier during the implementation (Cinar et al., 2019).

5.2.2 User training and involvement

According to Gupta et al. (2018) sufficient and systematic employee training can help to diminish the risk of organizational resistance. All of the participants underlined that getting the users acquainted with the system is vital for the implementation to be deemed successful. In the study of Mahmood et al. (2019), they found that knowledge transfer could prove to be more difficult when people were not IT literate and that training could prove to appear as a hidden cost. One of the participants gave an example of a municipality where they had experienced an issue of competency in terms of a new system. Consequently, it led to an increase in case processing time. Furthermore, the participant explained that the cost and time of the training should not be underestimated. Though all the participants recognized training

as important, one of the participants explained that as a consequence of the Covid-19 pandemic, their training was not optimal. This could be due to a lack of IT literacy within the municipality, as one of the other participants saw a significant benefit in having to conduct their training digitally due to the pandemic.

It is evident that the participants understand the importance of user training in terms of gaining value from the system. In the study of Mahmood et al. (2019) they explained that it is important to include every potential user and stakeholder in the selection process to overcome organizational resistance. Four of the participants stated that early involvement of system users is critical, both in terms of information and training. However, one of the participants also explained that, while it is important to involve people early in the process, starting the training process way in advance is not a sensible move. Nonetheless, similar to the study of Gupta et al. (2018) the findings from this study acknowledge sufficient and systematic employee training as vital to get employees on board and avoid resistance.

5.2.3 Project team & management

In any firm size, whether the ERP implementation is simple or complex, careful project management and a dedicated team are required (Elragal & Haddara, 2012). In addition, researchers emphasize the importance of having a project team that possesses competence from various departments and has a great impact on the successful implementation (Mahmood et al., 2019; Kamdjoug et al., 2020). This aligns with the findings from this study, as four of the participants stated that it is vital to have expertise from both business and IT during the process. However, one of the participants acknowledged that they were too few and lacked the necessary proficiency, which pressured them to pursue an unfavorable solution to the issue. This was recognized by one of the other participants who had a similar experience with their project team. Nonetheless, they were able to hire an external consultant which could act as a facilitator through the process and could be identified as critical to the team (Kamdjoug et al., (2020).

Together with a competent project team, Gupta and Misra (2016) underline the prominence of having a dedicated project manager in terms of overcoming barriers that occur during the implementation process. In the study of Kamdjoug et al. (2020), there was a project manager with limited skills which caused the entire project to be poorly managed. Though there were some of the participants recognized the importance of a solid project group, only two of the

participants mentioned that they saw great value in a skilled project manager. The other participants put more weight on the group in itself, which aligns with what (Daglio et al., 2015; Cinar et al., 2019; Bason 2018; Kromidha & Córdoba-Pachón, 2016) enlightens in terms of new work processes with interaction and democracy as the new norm when it comes to project management and service design.

An interesting finding was also identified as one of the participants described that within public procurement processes, many consider that after the product is bought, the project is finished. Kamdjoug et al. (2020) state that the relationship with each actor within a project needs to be carried out throughout the entire project. However, this participant explained that what usually happens is that resources are finite after having acquired the product and that this may be the cause for many projects within the public sector to fail.

5.2.4 IT infrastructure and system functionality

According to Gupta et al. (2018) organizations will require lesser IT infrastructure when transitioning to cloud-based ERP systems, as the services are offered by the cloud vendor. This was valued highly by two of the participants, as they explained that managing their own system is becoming more complex, and it is easier to contact the supplier when issues occur. There will however be an increase in the demand within the company for network infrastructure (Jones et al., 2019) where one of the participants explained that the future might be purchasing networks as a service, which can lead to more stability. Furthermore, in the study by Mahmood et al. (2019) they identified that to generate the greatest benefits from an ERP system, it must be integrated with other systems. One of the participants explained that because many of the same integrations must be set up, cloud-based ERP may be simpler to implement. However, two of the participants stated that for the system to function properly, good specifications from within the organization are required, as well as good guidelines from the supplier on how to deal with the situation. Thus, to ensure the guarantee of wide take-up of innovative new solutions, it depends on people (Bason, 2018).

Even though there were evident findings as to how the system functionality could be solved in a good manner, three of the participants did perceive challenges when it came to integrations with other systems. Integration difficulties have been identified as one of the rising challenges brought by cloud technologies (Peng & Gala, 2014), and ERP modules can be difficult to assimilate when integrating with a legacy system (Mahmood et al., 2019). One

of the participants revealed that choosing a cloud-based SaaS solution that uses outdated transaction technology, could lead to difficulties with integrations. Nevertheless, the results of this study suggest that organizations regard system integrations as both crucial and challenging in terms of deployment, and they need to be in sync for the implementation to be considered successful (Gupta et al., 2018).

5.3 Dynamic nature of barriers between different stages

Within this subsection, RQ3 will be addressed by demonstrating how particular barriers at the earlier stages can interact and foster new barriers at the later stages. The purpose of this is to explore the dynamism between barriers at different stages. Additionally, to further elaborate upon the theory of Markus et al. (2000) which demonstrates that both success and failures are measurable at the different stages of traditional ERP. As a result, this RQ aims to demonstrate the relationship between process-related barriers from the starting condition of adoption throughout the point of implementation.

5.3.1 Early barriers impact on later stages

Based on the analysis, we uncovered particular barriers that could have a negative impact during different phases of cloud ERP deployment. All participants agreed upon the fact that initial barriers can have an impact on later stages. In this context, one participant explained that what commences early in the process is what should be resolved at the end. To achieve this, various suggestions have been recommended. First, one participant stressed the importance of sustaining effective communication between management, users, and vendors during the process from adoption until post-implementation. Supportively, poor internal communication may lead to failure (Peng & Gala, 2014), whilst communication between organization and vendor has been vital to the experienced success of cloud technology implementation (Jones et al., 2019).

Scholars argue that within the design and development phase, a top-down approach and insufficient involvement can trigger opposition (Cinar et al., 2019). Our findings support this regarding the criticalness of involving both IT architectures and business management to avoid overlooking crucial factors when discussing and defining system requirements before procurement. However, our data show that smaller municipalities may be lacking in IT expertise. As a result, our research indicates that vendors who target this specific clientele

should provide reliable guidance. It is also advisable to hire external IT consultants who may function as an impartial third-party player to support the process.

Furthermore, in contrast to a top-down approach, we found evidence that the organizational barrier of inadequate IT expertise (Cinar et al., 2019) amongst hierarchical chief decision-makers, can result in adverse outcomes driven by pressure from below. This was evident as one of the municipalities experienced an increased demand for a specific time-registration application that was not incorporated in the HR module within the ERP suite. This resulted in added integration costs of half a million. Additionally, because they adopted a foreign feature from a competing vendor, there was a low extent of willingness from their ERP vendor to rectify errors that misaligned the supplemented integration. Accordingly, clients cannot customize and integrate the system with extra applications (Peng & Gala, 2014), and any alterations unattached to the fundamental package are rather expensive, which frequently implies unfavorable consequences regarding the vendor's intent in providing technical assistance (Alsharari, 2021). Nevertheless, it should be noted that this decision was compromised due to previous resistance regarding the organizational changes triggered by the cloud transition. However, this strongly emphasizes that the organizational barriers of resistance, lack of resources, and IT-expertise (Cinar et al., 2019) can provide costly consequences. As a result, respondents underpin the necessity of budget planning for all stages, including those after procurement, such as management and development-related activities. Further, Cinar et al. (2019) argue that the impact of organizational barriers declines as the process progresses, whereas interaction barriers escalate.

5.3.2 Interaction-specific barriers

Analysis revealed some interaction-specific barriers that emerge because of imprecise interaction (Cinar et al., 2019). For instance, the need to maintain effective communication with the vendor was critical. This was certainly addressed in terms of the establishment of a solid contract. The national strategy for use of cloud services contemplates contracts as the most important mechanism for controlling the customer-vendor relationship (Sanner, 2016). Thus, vendor honesty regarding what they can deliver is crucial. This appears to be highly critical in the initial phases of adoption and acquisition – as organizations procure ERP packages based on the requirements predefined in the adoption stage (Esteves & Pastor, 1999). Hence, to reduce trial and error before real adoption, it is vital to validate the actual fit

between cloud ERP and the organization to ensure that requirements are encountered (Ahn & Ahn, 2020).

Another interaction-specific barrier occurred in the collaboration between different municipalities. In particular, the collaboration involved the joint acquisition of a new case processing system. The participant emphasized that they would have procured the cloud solution if it was not for the compromise they had to make with the smaller municipalities. Thus, in retrospect, the participant expressed annoyance towards not being able to force through the decision, potentially due to the perception of incorrect system package selection or incompatibility with organizational principles or requirements. However, this again stresses the importance of defining system requirements that align with your organization's interests, rather than accompanying municipalities. Findings complement the Swedish study, which refers to this sort of collaboration as a challenge that may negatively affect decision-making (Ayele & Juell-Skielse, 2015). Accordingly, findings show that municipalities should collaborate to learn from each other's experiences, but not replicate each other's system needs and requirements.

6. Conclusion

When we started the project, we noticed that there was a lot of ambiguity around the adoption of cloud-based solutions in the public sector. The general tendency in the literature has emphasized the significance of weighing benefits and barriers, considering it is apparent that cloud ERP systems are not suitable for all organizations. Thus, we intended to identify factors that affect the willingness to apply such systems. Our study aligns with earlier research in terms of the factors related to availability, reduced costs, updates, and maintenance.

Furthermore, some of our findings are congruent with studies on SMEs, which reveal a correlation between size and desire to adopt. This is certainly relevant in smaller municipalities where resources and IT knowledge are tough to obtain and retain. As a result, rather than acting as a barrier to adoption, cloud-based data security is perhaps a driving factor. At the same time, our findings show contradictions to previous research. For instance, problems such as supplier reliance or vendor lock-in, as well as a lack of customization, have been identified as major barriers. This applies to both PSOs and enterprises in the private market. On the other hand, our findings reveal that this is not perceived as direct barriers to Norwegian PSOs. However, there are still indications that today's solutions are more tailored toward the private sector. In terms of vendor dependency, our findings indicate that they are not concerned about this due to data ownership. Nonetheless, some concerns have been expressed regarding market development and competition, as concrete examples have been provided indicating that there is a fear that potential monopolism may impede development in the long term.

Within the implementation stage, we observe that our findings closely resemble those of prior research. The results from the study show that PSOs are concerned with providing system users to utilize the system to efficiently be acquainted with the system and avoid opposition to the innovation. Furthermore, our findings suggest that they are concerned with selecting a supplier that can fulfill the organization's business goals, especially when it comes to integrations with other systems. Our results emphasize the importance of effective communication with the supplier to meet these demands. In contrast to prior research, our findings underline the necessity of a competent project team, where diverse professional competency and collaboration are vital, rather than project management in isolation.

The results also reveal that there is a dynamic interaction between factors in different phases. This supports previous research that has pointed out that success or failure at different stages is not necessarily deterministic to whether one succeeds or not. Nonetheless, our analysis discovered identifications that suggest that early barriers might subsequently contribute to unnecessary difficulties. Based on the preceding two research questions, we were able to identify barriers at various stages of the lifecycle. Through the experiences of the respondents, we could demonstrate how barriers at different stages impact each other. The main findings assert the need of keeping open lines of communication amongst all parties involved, including end-users, vendors, and management. Furthermore, we have identified that a lack of adequate IT expertise can be a challenge at various stages, such as adoption, where one may lack the necessary competence in terms of recognizing business needs, which can lead to added costs during implementation when it comes to integrations with other systems. As a result of our findings, we believe it is critical to create a solid contract that serves as a security mechanism for both parties.

7. Implications

7.1 Implications for research

Due to the comprehensiveness of our study, it contributes to three stages of the ERP lifecycle. Our study adds to the body of knowledge by providing identifications of factors that influence the adoption among Norwegian PSOs. In addition, the findings reveal that previously reported risks with adoption are not perceived as direct barriers by the participants. This may indicate an increased awareness of the technology. Our study also adds to previous research by defining which organizational factors influence adoption decisions, and by demonstrating the relationship between organizational size and technological needs. Furthermore, previous research has indicated that organizations perform a cost comparison analysis before actual procurement. Our research adds to this topic by identifying factors that Norwegian PSOs consider during the acquisition stage.

Previous research has revealed a high level of resistance to cloud-based technologies. On the contrary, our study shows that cloud-based is almost set as an explicit requirement when assessing potential system vendors. CSFs of implementation in the Cloud ERP domain has received limited research in general, as the only study that has explicitly addressed this is the study of Huang et al. (2021), meaning that the subject lack empirical evidence. Our study contributes to the field by supplying empirical evidence as well as revealing real-life circumstances within the Norwegian public sector in terms of Cloud ERP adoption and implementation.

Finally, our research contributes to the field by presenting a new research avenue in terms of the dynamic nature of barriers within the cloud ERP lifecycle. Based on the framework developed by Cinar et al., (2019), our study has discovered indications that barriers at one stage may lead to complications at later stages. Our study adds to this by demonstrating measures that can be applied to avoid negative outcomes. This study is, based on our knowledge, one of the first to employ this paradigm in the context of cloud ERP.

7.2 Implications for practitioners

Suppliers need to have an open and collaborative dialogue with their customers. Especially in terms of satisfying the requirements of the IS that should be applied within the public sector.

Furthermore, our research reveals that to obtain satisfied customers, organizations must provide clear instructions on how integrations and extra features may be conducted. However, our research indicates that clients are becoming more satisfied with cloud solutions. This suggests that suppliers have evolved in the right direction in terms of the public sector. Nonetheless, the results indicate that Cloud ERP solutions are still tailored toward the private sector. As a result, we believe that more open cooperation between customer and supplier can assist the supplier in achieving better services. For example, some functionalities have been deemed unnecessary by representatives from the public sector. Still, they underline that these functions may be advantageous, but that a lack of expertise prevents them from utilizing them in a valuable sense.

Our study provides useful insights for new adopters by evaluating existing client experiences. For example, our data can be useful in demonstrating how Norwegian PSOs can use cloud ERP to conduct their business operations more cost-effectively. Furthermore, our research indicates how various challenges may be avoided by enhancing their knowledge of system requirements and in terms of vendor selection. As a result, our findings emphasize the need of examining the whole process, from adoption to post-implementation, as barriers may interfere or evolve during the different stages. Finally, we demonstrate the importance of various CSFs that can aid new entrants to achieve success when implementing cloud ERP.

8. Limitations

In terms of literature, our study has certain limitations. For the adoption stage, as there is limited literature regarding cloud ERP, we have chosen to include research on general CC adoption. In terms of the implementation stage, only a few scholars have added to the body of knowledge. The ideal for the entire study would have been to have more directly relevant literature, as this would have provided a stronger theoretical foundation as well as a broader basis for further discussion.

Another consideration will be the qualitative method, which includes informants and interviews. First, it was difficult to find eligible participants who possessed the necessary qualifications. This is especially related to the implementation stage, as few PSOs have implemented a cloud-based ERP system. Furthermore, the purpose of the study was to identify organizational, technical, and environmental factors. Only two of the participants had pure technical experience, which is certainly a limitation when considering technical aspects.

Another limitation of this study is the sampling technique applied. Based on the vendor's market insights, a list of potential interviewees who either are clients or in the tender process was proposed. As a result, our study is highly dependent on these insights. This may have led to them being more inhibited in their responses (Oates, 2006) due to their relationship with the supplier.

Finally, rather than focusing on one phase in isolation, this study assessed the entire process, from adoption to implementation. This will result in a limitation, both in terms of obtaining relevant research on the subject and of the competence currently available for the implementation of such a project. As a result, it is fair to assert that the study lacks depth.

9. Future research

We have identified several factors that influence adoption decisions in either a positive or negative way. Nonetheless, due to the comprehensiveness of our study, it comes short in addressing the factors in depth. As a result, future research should consider these factors and examine these in greater depth. Furthermore, quantitative studies are recommended to assess the extent to which they can be generalized. Based on our results, we believe that the public sector will accelerate its adoption of cloud-based technologies in the foreseeable future. Hence, more researchers should build on their experiences, both in isolation of certain stages and across the entire process. More in-depth research of other probable CSFs is also strongly recommended. For example, current research on CSFs is limited. This should be researched further in both private and public sector organizations. We suggest that IS researchers evaluate our empirical evidence on CSFs, either to validate them or to provide new contradictory evidence.

Inspired by Sædberg and Haddara (2016) this study aimed to add to the field by investigating cloud ERP in a Norwegian context. Considering there is a scarce amount of research on cloud ERP both in terms of public sector organizations and more specifically in Scandinavian countries, our study has included several papers from international research. Based on this, it has been difficult to compare data within the same context. This asserts a research gap in the Norwegian and Scandinavian literature, and we suggest that more studies on the cloud ERP lifecycle should be conducted in future research to add to the body of knowledge.

To our knowledge, this study is one of the first to use various frameworks at different stages of the lifecycle in a single study and to draw connections between the stages. Based on this, future research should perform thorough case studies that investigate a specific organization to extract their experiences from various phases, as well as the relationship between the stages. This should be followed by multiple-case studies that allow for comparisons of different experiences.

As mentioned earlier, there is a scarcity of research on cloud-based ERP system implementation. Our findings suggest that the entire subject of cloud ERP implementation remains short in terms of both academia and real-world experiences among PSOs. Fortunately, our research indicates that there is a shift towards cloud-based systems among

PSOs. As a result, the prospects for additional research revealing more empirical data in the sector are promising. Finally, our study contributes to the field of cloud ERP by utilizing the framework developed by Cinar et al. (2019). We recommend that future research build on this to not only uncover critical barriers but also to find solutions that may cope with their interactive and dynamic nature.

10. References

- Abd Elmonem, M. A., Nasr, E. S., & Geith, M. H. (2016). Benefits and challenges of cloud ERP systems—A systematic literature review. *Future Computing and Informatics Journal*, 1(1-2), 1-9. <https://doi.org/10.1016/j.fcij.2017.03.003>
- Ahn, B., & Ahn, H. (2020). Factors affecting intention to adopt cloud-based ERP from a comprehensive approach. *Sustainability*, 12(16), 6426. <https://doi.org/10.3390/su12166426>
- Al-Ruithe, M., Benkhelifa, E., & Hameed, K. (2017). Current State of Cloud Computing Adoption – an empirical study in major public sector organizations of Saudi Arabia (KSA). *Procedia Computer Science*, 110, 378–385. <https://doi.org/10.1016/j.procs.2017.06.080>
- Albar, A. M., & Hoque, M. R. (2017). Factors affecting the adoption of information and communication technology in small and Medium Enterprises: A perspective from rural Saudi Arabia. *Information Technology for Development*, 25(4), 715–738. <https://doi.org/10.1080/02681102.2017.1390437>
- Ali, O., Soar, J., Yong, J., McClymont, H., & Angus, D. (2015). Collaborative Cloud Computing Adoption in Australian Regional Municipal Government: An exploratory study. *IEEE 19th International Conference on Computer Supported Cooperative Work in Design (CSCWD)*. <https://doi.org/10.1109/cscwd.2015.7231017>
- Alsharari, N. M. (2020). Institutional change of cloud ERP implementation in the public sector: A transformation of strategy. *International Journal of Disruptive Innovation in Government*. <https://doi.org/10.1108/IJDIG-03-2019-0002>
- Alsharari, N. M. (2021). Cloud computing and ERP assimilation in the public sector: institutional perspectives. *Transforming Government: People, Process and Policy*. <https://doi.org/10.1108/TG-04-2021-0069>
- Alsharari, N. M., Al-Shboul, M., & Alteneiji, S. (2020). Implementation of cloud ERP in the SME: Evidence from UAE. *Journal of Small Business and Enterprise Development*, 27(2), 299–327. <https://doi.org/10.1108/jsbed-01-2019-0007>

Arundel, A., Bloch, C., & Ferguson, B. (2019). Advancing innovation in the public sector: Aligning innovation measurement with policy goals. *Research Policy*, 48(3), 789–798.

<https://doi.org/10.1016/j.respol.2018.12.001>

Ayele, W. Y., & Juell-Skielse, G. (2015). User implications for cloud based Public Information Systems. *Proceedings of the 2015 2nd International Conference on Electronic Governance and Open Society: Challenges in Eurasia*.

<https://doi.org/10.1145/2846012.2846036>

Baker, J. (2011). The technology–Organization–Environment Framework. *Information Systems Theory*, 231–245. https://doi.org/10.1007/978-1-4419-6108-2_12

Bason, C. (2018). Leading public sector innovation: Co-creating for a better society. *Policy Press*.

Benbunan-Fich, R., Desouza, K. C., & Andersen, K. N. (2020). It-enabled innovation in the Public Sector: Introduction to the special issue. *European Journal of Information Systems*, 29(4), 323–328. <https://doi.org/10.1080/0960085x.2020.1814989>

Bjelland, E., & Haddara, M. (2018). Evolution of ERP systems in The cloud: A study on system updates. *Systems*, 6(2), 22. <https://doi.org/10.3390/systems6020022>

Chang, Y.-W. (2020). What drives organizations to switch to cloud ERP systems? the impacts of enablers and inhibitors. *Journal of Enterprise Information Management*, 33(3), 600–626. <https://doi.org/10.1108/jeim-06-2019-0148>

Chang, Y.-W. (2020). What drives organizations to switch to cloud ERP systems? the impacts of enablers and inhibitors. *Journal of Enterprise Information Management*, 33(3), 600–626. <https://doi.org/10.1108/jeim-06-2019-0148>

Christiansen, V., Haddara, M., & Langseth, M. (2022). Factors affecting cloud ERP adoption decisions in organizations. *Procedia Computer Science*, 196, 255–262.

<https://doi.org/10.1016/j.procs.2021.12.012>

Cinar, E., Trott, P., & Simms, C. (2019). A systematic review of barriers to public sector innovation process. *Public Management Review*, 21(2), 264-290.

<https://doi.org/10.1080/14719037.2018.1473477>

Cinar, E., Trott, P., & Simms, C. (2021). An international exploration of barriers and tactics in the public sector innovation process. *Public Management Review*, 23(3), 326-353.

<https://doi.org/10.1080/14719037.2019.1668470>

Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches*. SAGE Publications, Inc.

Daglio, M. G. D. K. H., Gerson, D., & Kitchen, H. (2014). Innovating the public sector: From ideas to impact. *Building Organisational Capacity for Public Sector Innovation*. Retrieved January, 19, 2020.

Davenport, T. H. (1998). Putting the enterprise into the enterprise system. *Harvard business review*, 76(4).

Demi, S., & Haddara, M. (2018). Do cloud ERP systems retire? an ERP lifecycle perspective. *Procedia Computer Science*, 138, 587–594. <https://doi.org/10.1016/j.procs.2018.10.079>

Elragal, A., & El Kommos, M. (2012). In-house versus in-cloud ERP systems: A comparative study. *Journal of Enterprise Resource Planning Studies*, 1–13.

<https://doi.org/10.5171/2012.659957>

Elragal, A., & Haddara, M. (2012). The future of ERP systems: Look backward before moving forward. *Procedia Technology*, 5, 21–30.

<https://doi.org/10.1016/j.protcy.2012.09.003>

Esteves, J., & Pastor, J. (1999, November). An ERP lifecycle-based research agenda. In *1st international workshop in enterprise management & resource planning*.

Francis, J. J., Johnston, M., Robertson, C., Glidewell, L., Entwistle, V., Eccles, M. P., & Grimshaw, J. M. (2010). What is an adequate sample size? Operationalising data saturation for theory-based interview studies. *Psychology and health*, 25(10), 1229-1245.

<https://doi.org/10.1080/08870440903194015>

Fusch, P. I., & Ness, L. R. (2015). Are we there yet? Data saturation in qualitative research. *The qualitative report*, 20(9), 1408.

Ganesh, L., & Mehta, A. (2016). Understanding cloud based ERP implementation in light of conventional ERP implementation at Indian smes: A case study. *SSRN Electronic Journal*.

<https://doi.org/10.2139/ssrn.2782244>

Gill, A. A., Amin, S., & Saleem, A. (2020). Investigation of critical factors for successful ERP implementation: An exploratory study. *Journal of Business and Social Review in Emerging Economies*, 6(2), 565–575. <https://doi.org/10.26710/jbsee.v6i2.1183>

Goundar, S., Gounder, R., Kumar, A., Chand, L., Singh, R., Whiteside, O., & Ali, I. (2021). ERP IMPLEMENTATION CHALLENGES AND CRITICAL SUCCESS FACTORS. *Enterprise Systems and Technological Convergence: Research and Practice*, 45.

Grossman, R. L. (2009). The case for cloud computing. *IT professional*, 11(2), 23-27.

Gupta, S., & Misra, S. C. (2016). Compliance, network, security, and the people related factors in cloud ERP implementation. *International Journal of Communication Systems*, 29(8), 1395–1419. <https://doi.org/10.1002/dac.3107>

Gupta, S., Misra, S. C., Kock, N., & Roubaud, D. (2018). Organizational, technological and extrinsic factors in the implementation of cloud ERP in smes. *Journal of Organizational Change Management*, 31(1), 83–102. <https://doi.org/10.1108/jocm-06-2017-0230>

Haddara, M. (2018). ERP systems selection in multinational enterprises: A practical guide. *International Journal of Information Systems and Project Management*, 6(1), 43–57.

<https://doi.org/10.12821/ijispm060103>

Haddara, M., Fagerstrøm, A., & Mæland, B. (2015). Cloud ERP systems: Anatomy of Adoption Factors & Attitudes. *Journal of Enterprise Resource Planning Studies*, 1–24. <https://doi.org/10.5171/2015.521212>

Hennink, M. M., Kaiser, B. N., & Marconi, V. C. (2016). Code saturation versus meaning saturation. *Qualitative Health Research*, 27(4), 591–608. <https://doi.org/10.1177/1049732316665344>

Huang, Q., Rahim, M., Foster, S., & Anwar, M. (2021). Critical success factors affecting implementation of cloud ERP systems: A systematic literature review with future research possibilities. *Proceedings of the Annual Hawaii International Conference on System Sciences*. <https://doi.org/10.24251/hicss.2021.569>

Ibrahim, A. M. (2022). A mapping towards a Unified Municipal Platform: An investigative case study from a Norwegian municipality. *Sustainable Futures*, 4, 100063. <https://doi.org/10.1016/j.sftr.2022.100063>

Ijaz, A., Malik, R.K., Lodhi, R.N., Habiba, U., & Irfan, S.M. (2014). A Qualitative Study of the Critical Success Factors of ERP System - A Case Study Approach.

Janssen, M., & Joha, A. (2011). Challenges for adopting cloud-based software as a service (saas) in the public sector.

Johansson, B., Alajbegovic, A., Alexopoulo, V., & Desalermos, A. (2015). Cloud ERP adoption opportunities and concerns: The role of Organizational Size. 2015 48th Hawaii International Conference on System Sciences. <https://doi.org/10.1109/hicss.2015.504>

Jones, S., Irani, Z., Sivarajah, U., & Love, P. E. (2019). Risks and rewards of cloud computing in the UK public sector: A reflection on three organisational case studies. *Information Systems Frontiers*, 21(2), 359–382. <https://doi.org/10.1007/s10796-017-9756-0>

Kachur, R., & Kleinsmith, W. (2013). The evolution to the cloud—are process theory approaches for ERP implementation lifecycles still valid?. *Business Systems Review*, 2(3), 72-93.

Kala Kamdjoug, J. R., Bawack, R. E., & Tayou, A. E. (2020). An ERP success model based on agency theory and its success model. *Business Process Management Journal*, 26(6), 1577–1597. <https://doi.org/10.1108/bpmj-04-2018-0113>

Knafl, K. A., Webster, D. C., Benoliel, J. Q., & Morse, J. M. (1988). Managing and analyzing qualitative data. *Western Journal of Nursing Research*, 10(2), 195–218. <https://doi.org/10.1177/019394598801000207>

Kromidha, E., & Córdoba-Pachón, J. R. (2017). Discursive institutionalism for reconciling change and stability in digital innovation public sector projects for development. *Government Information Quarterly*, 34(1), 16-25. <https://doi.org/10.1016/j.giq.2016.11.004>

Kuiper, E., Van Dam, F., Reiter, A., & Janssen, M. (2014, October). Factors influencing the adoption of and business case for Cloud computing in the public sector. *In eChallenges e-2014 Conference Proceedings (pp. 1-10)*. IEEE.

Lapsley, I., & Miller, P. (2019). Transforming the public sector: 1998–2018. *Accounting, Auditing & Accountability Journal*, 32(8), 2211–2252. <https://doi.org/10.1108/aaaj-06-2018-3511>

Lee, Y. C. (2019). Adoption intention of cloud computing at the firm level. *Journal of Computer Information Systems*, 59(1), 61-72.

Low, C., Chen, Y., & Wu, M. (2011). Understanding the determinants of cloud computing adoption. *Industrial Management & Data Systems*, 111(7), 1006–1023. <https://doi.org/10.1108/02635571111161262>

Magnusson, J., Khisro, J., Björse, M., & Ivarsson, A. (2020). Closeness and distance: Configurational practices for Digital Ambidexterity in the public sector. *Transforming Government: People, Process and Policy*, 15(4), 420–441. <https://doi.org/10.1108/tg-02-2020-0030>

Mahmood, F., Khan, A. Z., & Bokhari, R. H. (2019). ERP issues and challenges: A research synthesis. *Kybernetes*, 49(3), 629–659. <https://doi.org/10.1108/k-12-2018-0699>

Markus, M. L., Axline, S., Petrie, D., & Tanis, C. (2000). Learning from adopters' experiences with ERP: Problems encountered and success achieved. *Journal of Information Technology*, 15(4), 245–265. <https://doi.org/10.1080/02683960010008944>

Mattison, J. B., & Raj, S. (2012). Key questions every IT and business executive should ask about cloud computing and ERP. *Accenture White Paper*.

Miller, J. G. (2020). Factors that Influence the Public Sector's Adoption of a Cloud-Based ERP System: A Quantitative Study (*Doctoral dissertation, Capella University*).

Myers, M. D. (1997). Qualitative Research in Information Systems. *MIS Quarterly*, 21(2), 241. <https://doi.org/10.2307/249422>

Oates, B. J. (2006). *Researching Information Systems and computing*. SAGE.

Oliveira, T., & Martins, M. F. (2011). Literature review of information technology adoption models at firm level. *Electronic Journal of Information Systems Evaluation*, 14(1), pp110-121.

Päivärinta, T., & Dertz, W. (2008). Pre-determinants of implementing it benefits management in Norwegian municipalities: Cultivate the context. *Lecture Notes in Computer Science*, 111–123. https://doi.org/10.1007/978-3-540-85204-9_10

Peng, G. C., & Gala, C. (2014). Cloud ERP: A new dilemma to modern organisations? *Journal of Computer Information Systems*, 54(4), 22–30. <https://doi.org/10.1080/08874417.2014.11645719>

Ram, J., Corkindale, D., & Wu, M.-L. (2013). Implementation critical success factors (csfs) for ERP: Do they contribute to implementation success and post-implementation performance? *International Journal of Production Economics*, 144(1), 157–174. <https://doi.org/10.1016/j.ijpe.2013.01.032>

Regjeringen (April 2016) Digital agenda for Norge – IKT for en enklere hverdag og økt produktivitet. *Meld. ST. 27 (2015-2016)*. Ministry of Local Government and Regional Development. Retrieved February 25, 2022 from <https://www.regjeringen.no/contentassets/fe3e34b866034b82b9c623c5cec39823/no/pdfs/stm201520160027000dddpdfs.pdf>

Regjeringen (April 2018) Veileder til reglene om offentlige anskaffelser (anskaffelsesforskriften). Ministry of Trade, Industry and Fisheries. Retrieved February 20, 2022 from <https://www.regjeringen.no/contentassets/df547bb0f73d43d9b90756002473f680/no/pdfs/veileder-offentlige-anskaffelser.pdf>

Rogers, E. M. (2003). *Diffusion of innovations: 5th ed. Free Press.*

Saa, P., Costales, A. C., Moscoso-Zea, O., & Lujan-Mora, S. (2017). Moving ERP systems to the cloud - data security issues. *Journal of Information Systems Engineering & Management*, 2(4). <https://doi.org/10.20897/jisem.201721>

Sædberg, A., & Haddara, M. (2016). An exploration of adoption factors for cloud-based ERP systems. *The Public Sector Paper presented at NOKOBIT*, 1.

Salim, S. A. (2013). Cloud ERP Adoption-A Process View Approach. *In PACIS* (p. 281).

Salleh, S. M., Teoh, S. Y., & Chan, C. (2012). Cloud enterprise systems: A review of literature and its adoption. *In Proceedings of the 16th Pacific Asia Conference on Information Systems (PACIS 2012)* (pp. 1-10). RMIT University.

Sallehudin, H., Aman, A. H. M., Razak, R. C., Ismail, M., Bakar, N. A. A., Fadzil, A. F. M., & Baker, R. (2020). Performance and key factors of cloud computing implementation in the public sector. *International Journal of Business and Society*, 21(1), 134-152.

Sallehudin, H., Razak, R. C., & Ismail, M. (2015). Factors influencing cloud computing adoption in the public sector: An empirical analysis. *Journal of Entrepreneurship and Business*, 3(1), 30–45. <https://doi.org/10.17687/jeb.0301.03>

Sanner, J. T. (2016, May). Nasjonal Strategi for Bruk Av Skytenester - Regjeringen.no. Kommunal- og moderniseringsdepartementet. Retrieved March 23, 2022, from https://www.regjeringen.no/contentassets/4e30afec51734d458596e723c0bdea0e/nasjonal_strategi_for_bruk_av_skytenester.pdf

Seethamraju, R. (2015). Adoption of software as a Service (SAAS) enterprise resource planning (ERP) systems in small and Medium Sized Enterprises (smes). *Information Systems Frontiers*, 17(3), 475–492. <https://doi.org/10.1007/s10796-014-9506-5>

Shang, S., & Seddon, P. B. (2000). A comprehensive framework for classifying the benefits of ERP systems.

Tornatzky, L. G., Fleischer, M., & Chakrabarti, A. K. (1990). The processes of Technological Innovation. *Lexington Books*.

Ullah, A., Baharun, R. B., Nor, K., Siddique, M., & Sami, A. (2018). Enterprise resource planning (ERP) systems and user performance (UP). *International Journal of Applied Decision Sciences*, 377-390.

Wang, L., Von Laszewski, G., Younge, A., He, X., Kunze, M., Tao, J., & Fu, C. (2010). Cloud computing: a perspective study. *New generation computing*, 28(2), 137-146.

Weng, F., & Hung, M. (2014). Competition and Challenge on Adopting Cloud ERP. *International journal of innovation, management, and technology*. <https://doi.org/10.7763/ijimt.2014.v5.531>

Westskog, H., Aarsæther, N., Hovelsrud, G. K., Amundsen, H., West, J. J., & Dale, R. F. (2022). The transformative potential of local-level planning and climate policies. case studies from Norwegian municipalities. *Cogent Social Sciences*, 8(1). <https://doi.org/10.1080/23311886.2022.2033457>

11. Appendix

Appendix A: Consent form

Vil du delta i forskningsprosjektet Cloud ERP within the Norwegian Public Sector

Dette er et spørsmål til deg om å delta i et forskningsprosjekt hvor formålet er å undersøke hvilke faktorer som påvirker intensjonen til norske kommuner når det kommer til å ta i bruk skybaserte løsninger, og samtidig vurdere hvilke faktorer som er kritiske for en vellykket overgang til sky. I dette skrivet gir vi deg informasjon om målene for prosjektet og hva deltakelse vil innebære for deg.

Formål

Formålet med oppgaven er å undersøke om det er en sammenheng mellom adopsjons- og kritiske implementasjonsfaktorer. På bakgrunn av dette ønsker vi å identifisere adopsjonsfaktorer for overgangen til sky, samt kartlegge kritiske suksessfaktorer for selve implementasjonen av skybaserte løsninger innenfor offentlig sektor. Vi har dermed definert tre ulike forskningsspørsmål:

- 1: Hvilke faktorer påvirker norske kommuner sin intensjon til å adoptere skybasert ERP?
- 2: Hvilke kritiske suksessfaktorer er avgjørende når det kommer til en suksessfull implementasjon av skybaserte ERP løsninger innenfor offentlig sektor?
- 3: Hvordan fører barrierene identifisert i adopsjonsfasen til nye komplikasjoner i senere stadier?

Dataene vil bli brukt som en del av en masteroppgave med en kvalitativ metodisk tilnærming.

Hvem er ansvarlig for forskningsprosjektet?

Høyskolen Kristiania er ansvarlig for prosjektet.

Hvorfor får du spørsmål om å delta?

Du har blitt spurt om å delta fordi vi i dialog med en leverandør av ERP-systemer har kommet frem til at deres erfaringer knyttet til skybaserte løsninger vil være et godt bidrag i forhold til å få innsikt i skysystemer innenfor offentlig sektor.

Hva innebærer det for deg å delta?

Hvis du velger å delta i prosjektet, innebærer det at vi vil gjennomføre intervju med lydopptak, som senere vil bli transkribert og analysert. Spørsmålene vil omhandle hva som gjør selve intensjonen med å gjennomføre en overgang til sky aktuell, hvilke kritiske suksessfaktorer som er avgjørende for en suksessfull implementasjon samt om barrierer identifisert i adopsjonsstadiet fører til nye komplikasjoner i senere stadier. Herunder vil all form for personsensitiv data bli utelukket. Intervjuet vil ta deg ca. 60 minutter.

Det er frivillig å delta

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

Ditt personvern – hvordan vi oppbevarer og bruker dine opplysninger

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

Navnet og kontaktopplysningene dine vil erstattes med en kode som lagres på egen navneliste adskilt fra øvrige data. Dette lagres på en privat harddisk som kun vi vil ha tilgang til.

Deltakerne vil ikke kunne gjenkjennes i publikasjonen. Stillingstittel/erfaring kan være aktuell å inkludere i oppgaven ettersom dette kan gi en indikasjon til deres relevans for tema. Dette vil dog være frivillig.

Hva skjer med opplysningene dine når vi avslutter forskningsprosjektet?

Opplysningene anonymiseres når prosjektet avsluttes/oppgaven er godkjent, noe som etter planen er 25. Mai. Personopplysninger og lydopptak vil bli slettet etter prosjektperioden er avsluttet.

Dine rettigheter

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

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

Hva gir oss rett til å behandle personopplysninger om deg?

Vi behandler opplysninger om deg basert på ditt samtykke.

På oppdrag fra Høyskolen Kristiania 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:

- Høyskolen Kristiania ved [redacted]
- Høyskolen Kristiania ved [redacted]
- Høyskolen Kristiania ved [redacted]
- Vårt personvernombud: Høyskolen Kristiania ved [redacted]

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

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

Med vennlig hilsen

[redacted]

Prosjektansvarlig

Studenter

(Forsker/veileder)

Samtykkeerklæring

Jeg har mottatt og forstått informasjon om prosjektet [*sett inn tittel*], og har fått anledning til å stille spørsmål. Jeg samtykker til:

- Å delta i intervju*
- At intervjuet blir spilt inn på lydopptak*
- At resultatene fra intervjuene blir brukt i masteroppgaven*

Jeg samtykker til at mine opplysninger behandles frem til prosjektet er avsluttet

(Signert av prosjektdeltaker, dato)

Appendix B: Interview guide

Interview guide	
Introduction	<ul style="list-style-type: none"> -Introduce the topic and different terms. -Ask for consent to record the interview and inform about the right not to answer. -Elaborate on the purpose of the study.
Area of interest	Questions
1. Role and background	<ul style="list-style-type: none"> -Can you tell us about yourself and your role within the organization? -What is the motivation behind the transition into cloud-based systems? -There are different cloud solutions, which one do you currently have?
2. The intention of adopting cloud-based ERP	<p>Technological</p> <ul style="list-style-type: none"> -What do you perceive as benefits with cloud ERP? -What challenges do you perceive? -How can you cope with these challenges? -To which extent are employees familiar with cloud-based solutions? -To which degree are your IT infrastructure compatible with cloud-based systems? -Did you find it challenging to transfer historical data to the cloud? -How do you consider the data security in cloud-based systems compared with traditional systems? <p>Organizational</p> <ul style="list-style-type: none"> -How many was involved in the transition process? -To which degree was the ones involved critical to the transition? -How was the transition communicated? -How would you describe the organizations culture in terms of change? -Was the management supportive in the transition process?
3. Acquisition	<p>Environmental</p> <ul style="list-style-type: none"> -How did you assess different suppliers?
4. Implementation	<ul style="list-style-type: none"> -How would you describe the implementation process? -Who was involved? -Was the process complicated? -What factors did you perceive as critical during the implementation?

5. Level of impact	-Do you believe there is a dynamic interplay between factors at different stages of the process? -Do you think that barriers early in the process affect later stages? -To what extent do you perceive that initial decisions are decisive for the outcome of the implementation?
6. Summarization	-Is there anything that we did not mention that you would like to discuss?