

Organizational agility in the public sector: A case study of the Office of the Auditor General of Norway

SYLVI NERSKOGEN

SUPERVISORS

Sæbø, Øystein
Danielsen, Frank

University of Agder, 2022

Faculty of Social Science
Department of Information Systems



Foreword

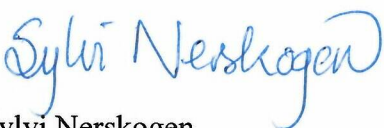
This master thesis marks the end of my master of science in information systems at the University of Agder. My journey started in 2016, as a part time student on bachelor in IT and information systems. Since then, my interest in the field of information systems has only increased. The timely focus on both digital transformation and sustainability throughout the entire study has been very enlightening. The motivation for choosing organizational agility as the topic for my master thesis was at first to understand more of how public organizations can become agile. However, during the process, it became obvious that being agile is not a goal in itself for any organization. Research on private sector shows that the general goal of organizational agility is improved competitiveness or organizational performance. Therefore, the question arises: do public sector even want to be agile? The case of study is my employer, the Office of the Auditor General, which is the supreme audit institution in Norway. The phenomenon to explore was the establishment of an innovation lab as part of a modernization program. The innovation lab is considered an agility enabler in this study, helping the organization to improve its agile capabilities to tackle changes occurring in the organization's environment, in order to achieve its goals and fulfill the social mission.

I would like to thank my employer, the Office of the Auditor General of Norway, for granting me study leave, and for the support and encouragement during the process of completing this master's degree. I would also like to express my gratitude to the innovation lab for allowing me to write my master thesis about them. To all of you who contributed in interviews and meetings: thank you for sharing.

I would also like to thank my supervisors Professor Øystein Sæbø and PhD Frank Danielsen, for your enthusiasm and your patience. Your support has made all the difference during the process. You have my deepest respect and appreciation.

Last, but not least, my husband Jonny and to my two kids Kristoffer and Ingrid deserves the biggest thank you of all. You guys are the best.

Kristiansand, 1st of June 2022



Sylvi Nerskogen

Abstract

This master thesis explores organizational agility in the public sector through a case study of a state agency. *Organizational agility is as a learned, permanently-available dynamic capability that can be performed quickly and efficiently to the degree necessary, and whenever needed, to increase business performance in a volatile market environment.* Although the definition includes a focus on a volatile market environment and business performance, many public organizations strive for agility. This master thesis investigates whether the concept of organizational agility could be a good fit for the public sector, even without obvious competitors and profit focus. A literature review was conducted to get an overview of previous research on organizational agility within the public sector. This resulted in a conceptual model, which forms the theoretical lens for this study. The model includes three main elements: drivers (external and internal), organizational agility (agility enablers and agile capabilities) and organizational performance. The topic is explored through a case study of the Office of the Auditor General of Norway (OAGN) and their innovation lab. The research question is: *How can an innovation lab influence organizational agility the public sector?* Ten semi-structured interviews were conducted, and eight meetings were observed by the researcher. Strategic documents were analyzed to obtain an understanding of organizational performance. The empirical results show both external and internal agility drivers in the OAGN. The study identified some challenges in the organization, such as the organizational culture, communication style, the availability of technology, the development of competence for the future, and autonomy versus alignment. The challenges are mapped to the agile capabilities suggested by previous research. Competence, flexibility and courage are identified capabilities in the innovation lab. The innovation lab has indeed increased the organization's awareness about new technology trends, which is seen as the sensing part of the responsiveness capability. The innovation lab improves the organization's ability to pursue possibilities provided by new technology. Although, being agile is not the goal, a holistic view of agility can help organizations reach their strategic goals and the social mission. Measuring and monitoring the performance provide management with the necessary insight to adjust the enablers and improve the capabilities to tackle changes in the organization's environment. This study provides insight into practice and can be of inspiration for other state agencies striving for agility. An adjusted conceptual model for organizational agility in the public sector is suggested. The model should be challenged and further tested in other cases and through other research approaches.

Key words: organizational agility, public sector, audit, innovation lab

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1. Introduction

For governments all over the world, increased spending pressure is expected in the next few decades (Robinson, 2020, p. 1; Norwegian Agency for Public and Financial Management, 2022a, 18:12). Robinson suggested that in the next 30 years, there will be an increased need for prolonged healthcare and pension payments. The development within biotechnology will provide new opportunities for the treatment of diseases, which can increase the treatment expectations and related costs. Moreover, climate changes and the subsidization of energy conversion are expected to contribute to increased expenditures. In some countries, the need for debt reduction is a big issue, which will contribute to even more pressure on government expenditures (Robinson, 2020; Norwegian Agency for Public and Financial Management, 2022a, 19:10). For Norway, debt is not an issue. However, there is a strong focus on equitable distribution of benefits between generations, which limits withdrawals from the Petroleum Fund. (Norwegian Agency for Public and Financial Management, 2022a, 21:30). Due to this expected intense spending pressure, there will be a need to cut the baseline expenditures. Robinson suggested two solutions: increasing efficiency by delivering the same public services at lower costs and setting priorities, such as cutting public services that do not contribute to value creation, like disability benefits (Robinson, 2020, p. 253; Norwegian Agency for Public and Financial Management, 2022a, 26:24). The Ministry of Finance offered similar long-term perspectives on the Norwegian economy in a white paper for Parliament. (Meld. St. 14 (2020–2021)). Maximizing benefits for the population at the minimum cost and providing public services efficiently and effectively were highlighted (Meld. St. 14 (2020–2021), p. 9). Innovation in the public sector were described as *“implementing something new which creates value for the citizens and for society”* (Meld. St. 30 (2020–2021), p. 13). This might be a new or significantly improved service, product, process, organization, or means of communication (Meld. St. 30 (2020–2021), p. 7). *“The government’s goal of innovation is to have an efficient public sector that delivers good services to the citizens, has a high degree of trust in the population, and finds new solutions to societal challenges in collaboration with the citizens, businesses, research environments and the civil society”* (Meld. St. 30 (2020–2021), p. 8).

The society at large expects transparency with regards to public expenditure and value for money, and accountability demands are expanding (Otia & Bracci, 2022, p. 253). Supreme audit institutions are considered promoters of good governance ingredients such as

transparency, accountability, and performance improvement (Otia & Bracci, 2022, p. 253). In Norway, the supreme audit institution is called the Office of the Auditor General of Norway (OAGN). They have an important constitutional role by providing the Parliament with independent audit of the government (Office of the Auditor General of Norway, 2022a). OAGN ensures that the central government's revenues are paid as intended, and that the central government's resources and assets are used and managed according to sound financial principles and in compliance with parliamentary decisions (The Office of the Auditor General of Norway, 2022a). Supreme audit institutions are expected to evolve to meet the contemporary demands of its society (Otia & Bracci, 2022, p. 253).

Agility can be understood as “*the capacity to react quickly to rapidly changing circumstances*” (Brown & Agnew, 1982, as referred by Walter, 2021, p. 344). In system development, the term agility is well known. However, organizational agility takes a holistic approach to agility, where agile system development can be viewed as an enabler. That is, one of many elements for realizing agile capabilities in an organization. (Walter, 2021, p. 383). Agile software development became known through the agile manifesto (Beck et al., 2001). Scrum is an example of an agile approach commonly used in system development. The term scrum can be traced back to a 1986 research article about product development by Takeuchi and Nonaka, in which the authors' analogy compared high-performing, cross-functional teams to the scrum formation used by rugby teams (1986, pp. 137–146). Scrum is now a commonly used agile framework that offers suggestions for how work can be organized to maximize value for the end-user (Scrum Alliance, 2022). The difference between agile and scrum is important. “*While scrum is implemented at a product development team level, agile has a focus on the entire organization, including its leadership and company culture*” (Scrum Alliance, 2022). “*Organizational agility is a learned, permanently-available dynamic capability that can be performed to a necessary degree in a quick and efficient fashion, and whenever needed in order to increase business performance in a volatile market environment*” (Walter, 2021, p. 379). In the private sector, the main objective of organizational agility is increased competitiveness, and multiple studies support the positive impact of organizational agility on a firm's performance (Walter, 2021, p. 354). However, according to Kirkpatrick et al. (2021, p. 68), many government agencies call for agility in their mission statements and strategic plans. Although public sector organizations are not directly impacted by competitive market forces and do not intend to make a profit, they are still affected by changes in their environment (Kirkpatrick et al., 2021, p. 68).

This point was also highlighted by the government:

“Public services need to evolve in line with changes in society. Public sector entities need to make use of new technology and work in a smarter way. This requires appropriate organisation, professional management and leadership, cross-sectoral cooperation, and active efforts to reap the gains from innovation and new technology” (Meld. St. 14 (2020-2021), p. 8).

The systematic literature review conducted as part of this study identified a need for more research on organizational agility in the public sector. Other researchers have suggested external and internal environment measures, and outcomes as potential topics of future research, and by using other methods for collecting data than surveys (Kirkpatrick et al, 2021). This master thesis includes external and internal drivers of organizational agility, and reflects on how to measure performance through a case study approach. A recent literature review showed a significant amount of research on organizational agility in the private sector, which also confirmed the positive effect on business performance. However, the review identified a need for clarification on the conceptual level and called for empirical testing of the proposed conceptual model (Walter, 2021). Walter stated that recent research on agility has been mostly theoretical–conceptual, and that *“qualitative research could uncover valuable in-depth insights and interesting relationships”* (2021, p. 384). Walter suggested that an exploratory, in-depth, longitudinal case study could offer insight into the learning and realization process (2021, p. 384). The need for more research on industries other than manufacturing was also mentioned (Walter, 2021, p. 385). Although not longitudinal, this is an exploratory case study within the public sector, which contributes to insights about the different elements of organizational agility and the relationship between them.

By choosing the OAGN as the case, and their innovation lab as phenomenon, this study also answers to the call for more research on supreme audit institutions as technological innovation advances (Otia & Bracci, 2022, p. 271). Innovations and the use of new technology in the public sector in general require new competencies in supreme audit institutions, but digitalization is also recognized as important for the future of auditing (Otia & Bracci, 2022, pp. 253–254). The OAGN’s vision is ‘Auditing to benefit the society of tomorrow’ (Office of the Auditor General of Norway, 2018). A modernization program was established in 2017 as one of several tools for management to achieve the organization’s strategic goals (Office of the

Auditor General of Norway, 2017b). One of the development initiatives in the modernization program was the data center project, which later evolved into a permanent unit: the innovation lab. Through the theoretical lens of organizational agility, the innovation lab can be considered a management tool, an enabler of organizational agility. This study explores how the innovation lab influences the agile capabilities in the OAGN, and reflects on the measurement of performance in a state agency.

1.1. Research question

The main research question in this master thesis is *how can an innovation lab influence organizational agility in the public sector?* To obtain an understanding of the concept of organizational agility in the public sector, the following research sub questions were investigated:

1. *What can be drivers of organizational agility in a state agency?*
2. *How can an innovation lab influence organizational agility in a state agency?*
3. *What can be challenges of organizational agility in a state agency?*
4. *How can organizational performance be measured in a state agency?*

This document is structured as follows: chapter 2 provides an overview of the theory related to organizational agility. Chapter 3 includes a description of research strategy, data collection, data analysis, reflections on quality and methodological limitations. A presentation of the case of study follows in chapter 4. Empirical findings from interviews, observations and document analysis are presented in chapter 5, and these are further discussed according to theory in chapter 6. At the end of chapter 6, an adjusted conceptual model is suggested, based on the empirical findings in this case. Chapter 7 includes the conclusions based on the research questions, implications, limitations and suggestions for further research.

2. Theoretical background

This chapter provides an overview of previous research on organizational agility. The purpose is first, to obtain an understanding of the potential difference in the understanding of the term organizational agility in the private sector compared to the public sector. Second, to understand if the elements that make up organizational agility are different in the public versus private sector. Third, to obtain an understanding of the potential influence of organizational agility on organizational performance for public organizations.

A recent literature review covers organizational agility in general (Walter, 2021). It provides a conceptual model and clarifications of elements within organizational agility. However, much of the previous research on the topic of organizational agility is oriented towards the private sector, and the manufacturing industry in particular (Walter, 2021, pp. 350-353). To identify relevant previous research on organizational agility within the public sector specifically, a separate literature review was conducted for this purpose. The literature review on the public sector, combined with Walter’s literature review (2021) will form the basis for a theoretical lens and a conceptual model to further interpret the findings in this case study. As recommended by Webster and Watson (2002), the presentation will be structured according to concepts, and not author centric. Table 1 shows the concept matrix developed during the literature review process. A detailed description of the process of identifying, choosing and evaluating relevant prior research on organizational agility can be found in Appendix 1. At the end of this chapter, the theoretical framework for this case study is presented.

Table 1: Concept matrix

Nr	Forfatter	År	Identified through	Organizational agility concepts										Theoretical background						
				Antecedents / Drivers / Change factors	Enablers / Providers	Characteristics / Capabilities / Competencies	Dimensions / Types	Successfactors	Challenges / Inhibitors	IT-business alignment	Organizational performance / Outcome	Dynamic Capabilities	Enterprise Architecture (Zachman)	Resource Based View	IT (enabled) Capabilities	Employee empowerment	Cooperative management			
1	Kirkpatrick S.A., Miller S.C., Terragnoli A., Sprenger A.	2021	Search Scopus	X		X				X		X								
2	Barroca L., Sharp H., Dingsøyr T., Gregory P., Taylor K.,	2019	Search Scopus		X			X	X			X	X							
3	Carvalho J., Sousa R.D.	2014	Search Scopus		X					X		X		X						
4	Chen J., Wang D., Pan S.L.	2011	Search Scopus		X							X			X	X				
5	Nouri B.A., Mousavi M.M.	2020	Search Scopus			X						X					X	X		
6	Jonathan, G.M. & Watat, J.K.	2020	Search Scopus		X					X	X	X								
8	Overby, Bharadwaj & Sambamurthy	2006	Backwards søk		X				X			X								
9	Teece, Peteraf, Leih	2016	Backwards søk			X						X								
10	Tallon & Pinsonneault	2011	Backwards søk			X	X			X	X	X								
11	Sambamurthy, Bharadwaj & Grover	2003	Backwards søk				X					X				X				
12	Van Oosterhout, Waarts & Hillegersberg	2006	Backwards søk	X	X				X			X								
13	Njissen and Paawe	2012	Backwards søk		X	X						X								
14	Walter, A-T.	2021	Updated search	X	X	X	X					X	X							

After presenting definitions of organizational agility, the main concepts and elements of organizational agility will be described: drivers, enablers, capabilities, organizational performance and management’s role.

2.1. Definitions

Walter (2021) found many different definitions and prevailing disagreements about the concept of organizational agility. According to Walter, this has led to a lack of common understanding and makes it difficult to build on previous research findings (2021, p. 345). Walter offers a definition and a concept for the application of organizational agility in an organization. *“Organizational Agility is a learned, permanently-available dynamic capability that can be performed to a necessary degree in a quick and efficient fashion, and whenever needed in order to increase business performance in a volatile market environment.”* (Walter, 2021, p. 379). This definition of organizational agility builds on the concept of dynamic capabilities. Dynamic capabilities enable firms to integrate, build, and reconfigure their competences to address rapidly changing environments (Teece, Pisano & Shuen, 1997, p. 516). Dynamic capabilities are *“the firm’s capacity to innovate, adapt to change, and create change that is favorable to customers and unfavorable to competitors”* (Teece, Peteraf & Leih, 2016, p. 18). Overby, Bharadwaj and Sambamurthy states that the concept of dynamic capability is much broader concept than enterprise agility (2006, p. 121). The literature review showed that the terms enterprise agility and organizational ability are used interchangeably and articles using both terms is therefore included in this study, as shown in table A1-1 in Appendix 1. Lee et al conceptualizes organizational agility as *“a higher-order dynamic capability to configure and reconfigure organizational resources in response to the environment for emerging competitive realities”* (2015, p. 400, as referred by Walter, 2021 p. 349). Walter’s definition of organizational agility introduces something new compared to dynamic capabilities: a sense of speed or urgency when responding to changes in the environment, and also that organizational agility should not be considered a permanent state, but a capability available whenever needed. It is fair to draw attention to the fact that Walter’s definition does not include competitiveness as a direct result of organizational agility, but rather through increased business performance.

Most articles found in the literature review on organizational agility within the public sector, have different definitions of organizational agility. Barroca et al. states *“Although there is no single agreed definition of business, organizational or enterprise agility, it is seen as a set of desirable qualities that demand a transformation affecting the whole organization.”* (2019, p. 208). One definition of organizational agility is *“the ability to move quickly in new directions as needed without breaking the core infrastructure and without putting the organization at undue risk”* (PriceWaterHouseCoopers, 2008; as referred by Carvalho & Sousa, 2014, p. 2).

“Organizational agility is defined as a set of organizational capabilities that allow an organization to effectively sense changes in the turbulent environment and respond to this change through the constant alignment of assets and capabilities in a timely, efficient and cost-effective way” (Chen et al., 2011, p. 2-3).

Chen et al (2011) easily conclude that *“Government, like other organizations, possess limited resources while confronting competition from peer organizations”* (2011, p. 3). Chen et al refer to Porter (1990) for support of this assumption, but do not describe the potential competitors (2011). Researchers argue that organizational agility is a necessary capability that could help organizations achieve their goals (Nijssen & Paauwee, 2012; as referred by Jonathan & Watat, 2020, p. 2). Based on a literature review, four elements of organizational agility were identified; scalable workforce; flexible infrastructure; innovation; rapid organizational learning. (Jonathan & Watat, 2020, p. 4). Although government agencies are not impacted by competitive market forces and are not profit based, they are still impacted by changes in their environment, and many of them call for agility in their mission statements and strategic plans (Kirkpatrick et al, 2021, p. 68). After performing a literature review from a wide range of disciplines, Kirkpatrick et al suggest a definition of organizational agility: *“the capacity to adapt quickly and effectively in response to, or in expectations of, changes in the organization's environment”* (2021, p. 69).

The term “agile” explains the speed and accountability of an organization in dealing with its internal and external events (Nouri & Mousavi, 2020, p. 17). Although referring to some of the same articles as the other articles in the literature review (Overby et al, 2006; Teece et al, 2016; Van Oosterhout et al, 2006) it seems the interpretation of organizational agility is somewhat different in Nouri & Mousavi’s (2020). Hence, this statement *“One can view organizational agility [...] as organizational performance state in terms of adaptability and flexibility, which can be attained by means of the organizations activities”* (Nouri & Mousavi, 2020, p. 24). And further *“[...] from a process-based viewpoint, organizational agility is defined as a set of processes make it possible for an organization to sense changes and respond to them in an efficient, effective, timely, and cost-effective way, both in external and internal atmospheres”* (Nouri & Mousavi, 2020, p. 25).

Table 2: Definitions of organizational agility, public sector

Author	Definition of organizational agility (OA)
Barroca, Sharp, Dingsøyr, Gregory, Taylor & AlQaisi (2019, p. 208)	A set of desirable qualities that demand a transformation affecting the whole organization
Carvalho & Sousa (2014, p. 2)	The ability to move quickly in new directions as needed without breaking the core infrastructure and without putting the organization at undue risk
Chen, Wang & Pan (2011, p. 2-3)	A set of organizational capabilities that allow an organization to effectively sense changes in the turbulent environment and respond to this change through the constant alignment of assets and capabilities in a timely, efficient and cost-effective way
Jonathan & Watat (2020, p. 2)	A necessary capability that could help organizations achieve their goals
Kirkpatrick, Miller, Terragnoli & Sprenger (2021, p. 69)	The capacity to adapt quickly and effectively in response to, or in expectations of, changes in the organization's environment
Nouri & Mousavi (2020, p. 24)	<p>An organizational performance state in terms of adaptability and flexibility, which can be attained by means of the organizations activities.</p> <p>Organizational agility is defined as a set of processes make it possible for an organization to sense changes and respond to them in an efficient, effective, timely, and cost-effective way, both in external and internal atmospheres.</p>

For the purpose of this master thesis, the definition of organizational agility is inspired by Kirkpatrick et al (2021), and Jonathan & Watat (2020): *the capacity to adapt quickly and effectively in response to, or in expectations of, changes in the environment in order to achieve the strategic goals of the organization and fulfil the social mission.*

2.2. Concepts

Previous research shows several different conceptual models for organizational agility. Chen et al suggest a process model of resource configuration and agile development (2011, p. 7), building on case study findings from a project in Shanghai. Their results show that dynamic processes of resource configuration lead to organizational agility development, and that IT and institutional resources are configured interdependently and complimentary (Chen et al, 2011,

p. 7). Another conceptual model shows how cooperative management affects organizational agility, with employee empowerment as a mediating factor (Nouri & Mousavi, 2020, p. 40). A survey was conducted within one public transportation company in Iran and emphasizes the need for employee empowerment and cooperative management to cope with the current complexity in the business environment. (Nouri & Mousavi, 2020). A statement confirms this “[...] it is suggested that participatory atmosphere be further implemented within public transportation companies in order to increase order and discipline, and also to strengthen human relationships between employees and company management.” (Nouri & Mousavi, 2020, p. 40). Hence, the main focus is not on organizational agility as such. Jonathan & Watat (2020) present a research model focusing on IT alignment and organizational agility and their influence on organizational performance. The two elements in their model influencing organizational agility are organizational structure and organizational culture. IT alignment and organizational agility influences each other and they both influence organizational performance (Jonathan & Watat, 2020).

Kirkpatrick et al were unable to identify organizational agility measures for government and nonprofit organizations, and developed a model of their own for organizational agility and a Government Organizational Agility Assessment (GOAA) for this purpose (2021, p. 67), as shown in figure 1.

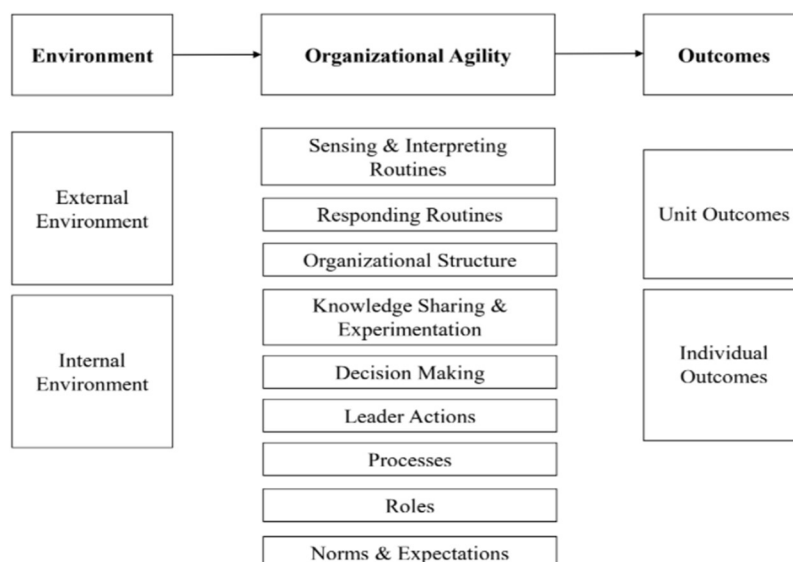


Figure 1: Organizational agility model (Kirkpatrick et al, 2021, p. 72)

Kirkpatrick et al identified and defined antecedents, characteristics, and outcomes of agile organizations from literature, while excluding elements not considered suitable for government or nonprofit organizations, like competitiveness, market pressure, revenue, and profit (2021, p. 69). The elements were tested empirically through a GOAA survey. They received responses from 1119 individuals in eight different units within five government and nonprofit organizations. Figure 2 below shows their organizational agility model. The elements of the model will be explained below. Results show that validity evidence was obtained with regards to the relationship between environment, organizational agility, and outcomes (Kirkpatrick et al, 2021, p. 77).

Based on a literature review, Walter (2021) also developed a holistic, conceptual model of organizational agility as shown in Figure 2.

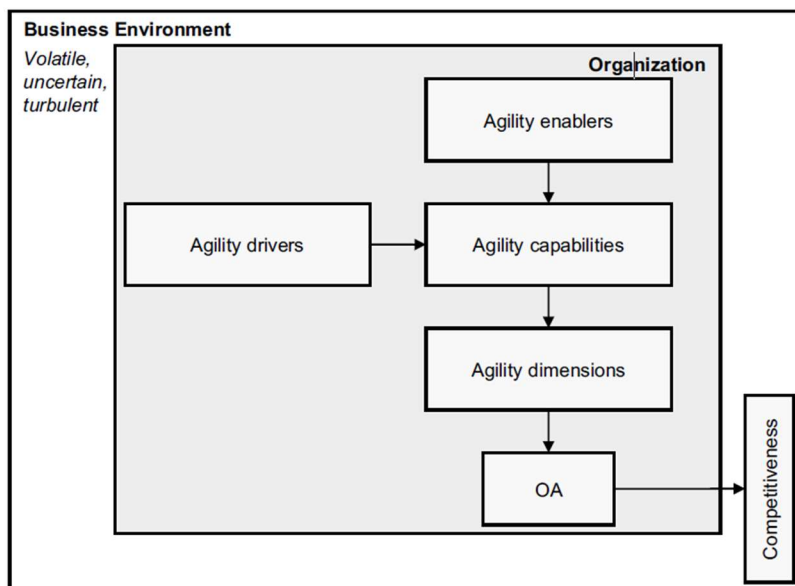


Figure 2: Basic framework - organizational agility concept (Walter, 2021, p. 355)

The agile organization operates in a volatile, uncertain and turbulent environment, where changes in agility drivers necessitate the development of agility capabilities. Agility capabilities are realized through a specific set of agility enablers or providers. The agile capabilities are implemented in the different agility dimensions of the organization. This, in turn, can reduce the negative impact of agility drivers, and contribute to improved business performance and thus, increased competitiveness (Walter, 2021, p. 355-356). During the next sub chapters, drivers, enablers, capabilities, performance will be explained. Management’s role

is also presented shortly, as this is a topic appearing later in chapter 6 during discussion of the results. The last sub chapter (2.8) includes a presentation of what be the theoretical framework for this case study.

2.3. Drivers

Agility drivers, or driving forces for agility, are environmental changes that necessitate a response from the organization to improve competitiveness (Walter, 2021, p 354). Research show that units experiencing a volatile, uncertain, complex, and ambiguous (VUCA) environment, were more likely to attempt to manage that environment through organizational agility (Kirkpatrick et al., 2021, p. 77). External drivers appear in the organization's surroundings. Examples of such drivers are market changes, environmental pressure, legal/political pressure and changes, higher quality demands, technology changes and innovation (Walter, 2021, p. 357). Internal drivers are those appearing within the organization. Examples of internal drivers are workforce/workplace expectations, continuous improvement strategy, new performance measurement system, organizational structure, management style (Walter, 2021, p. 357-358). Other researchers use the term antecedents instead of drivers, but seems to use the term in a similar way. Kirkpatrick et al's literature review identified two types of antecedents: the external environment and the internal environment. The external environment are factors like changes to legislation, social factors and trends, customer and citizen expectations, technology, and natural events (2021, p. 69). Internal environment consists of factors like the organization's leadership, policies and actions (Kirkpatrick et al., 2021, p. 69). Research conducted prior to 2001 were focused on external drivers, but has since then also included more internal drivers (Walter, 2021, p. 356).

2.4. Enablers

Agility enablers are by some researchers called agility providers or agile practices. Walter (2021) argues that enablers include methods, tools, practices and technology facilitating organizational agility and refers to Zhang & Sharifi (2000): "*Hence identified agility enablers [...] constitute a choice of methods and techniques and can be seen as a tool kit for managers, from which they must choose the most suitable combination of methods to respond effectively to changes*" (Walter, 2021, p. 375). Agility enablers need to be customized to the company and its environmental conditions and "*A universal set of agility enablers is not generally determinable*" (Walter, 2021, p. 375). Examples of enablers identified by many different

researchers are information technology, information systems and virtual enterprises; a multi-skilled, flexible and empowered workforce; continuous improvement and change and risk management; active support of top management, a supportive organizational structure and agile strategy (Walter, 2021, pp. 359-360). Tallon and Pinnsonneault (2011) argue that the enablers need to be aligned to have a positive effect on agility. The development of enterprise architecture was identified as a potential enabler of organizational agility by Carvalho & Sousa (2014, p. 9). The importance of enterprise architecture for public sector is highlighted, as it provide a holistic view of the organization in a business context: “*Business-IT alignment seems to be central to enable agility and enterprise architecture is a way of achieving that alignment.*” (Carvalho & Sousa, 2014, p. 9). Although Chen et al. do not use the term enablers, two types of *resources* are the most prominent ones for agility development of government: IT resources and institutional resources (2011, p. 3). IT resources referred to IT assets and capabilities available and useful to detect and respond to market opportunities or threats. Institutional resources are assets and capabilities available and useful for institution development. Examples are political concepts and beliefs, formal rules, informal rules and organizational structures. (Chen et al., 2011, p. 3). In a case study, Barroca et al. identified ten *success factors* and the authors points to the fact that the success factors might also be considered enablers (2019, p. 218). The ten success factors were: a clear and inspiring purpose focusing on results to stakeholders; supportive leadership; a feeling of achievement; commitment to transparency; need to be financially sustainable, not only commercial; fluid, constantly changing, iterative; collective ownership; restructuring, consolidating, learning; strong team, supporting each other; good communication (Barroca et al., 2019, p. 215). In this study, the innovation lab will be viewed as an enabler of organizational agility.

2.5. Capabilities

The exact differences between the use of the terms characteristics, capabilities, competencies and enablers in previous research is not clear. Some researchers identified nine *characteristics* of agile organizations: sensing and interpreting routines, responding routines, organizational structure, knowledge sharing and experimentation, decision-making, leader actions, processes, roles, and norms and expectations (Kirkpatrick et al., 2021, p. 69; 72-73). Others suggest three different *approaches* to achieving enterprise agility through business transformation: scaled-framework-driven, business-driven or sustainable agility (Barroca et al., 2019). Scaled-framework-driven means a focus on software development frameworks to improve operational

agility (operational orientation). Business-driven considers how the business model can become more agile (strategic orientation). While sustainable agility sees the organizational culture as key to support the long-term objectives of a transformation (cultural orientation) (Barroca et al., 2019, p. 208). The behavior-led approach is the focus in Barroca et al's study of the transformation of a local government in the UK (2019, p. 208). Their research also identified challenges through their case: recruitment; business as usual versus transformation; loss of knowledge and experience; silos; internal processes and procedures; workloads; leadership vulnerability and resilience to change; people-related challenges (e.g. trauma, survivor guilt, frustration; emotional journey; old mindset) (2019, p. 216).

Nouri & Mousavi (2020) refer to organizational agility *variables*: accountability, competence/qualifications, flexibility and speed. Accountability is explained as the ability to detect rapid changes, react to and use them. Competence/qualifications represents the ability of obtaining the objectives and achievements of the organization. Flexibility means the ability to guide various processes and achieve different goals with the same features. Speed is the ability to perform activities in the shortest possible time (Nouri & Mousavi, 2020, p. 20). The researchers do not use the term capabilities explicitly, but they still describe all of these variables as the ability to do something, which can be associated with capabilities.

Walter refers to Lin et al (2006), when explaining the capabilities needed to both sense and respond appropriately to the changes appearing in the surrounding environment (external drivers) and within the organization (internal drivers) (Walter, 2021, p. 376). Four generic agility capabilities are commonly referred to in research: responsiveness, speed, flexibility and competency.

Responsiveness is defined as the ability to identify changes, rapidly respond to changes either actively or proactively, and to recover from changes (Sharifi & Zhang, 1999, p. 17). Sub-capabilities are sensing, perceiving and anticipating changes, an immediate reaction to changes and recovering from changes (Sharifi & Zhang, 1999, p. 17; referred by Walter, 2021, p. 360). Overby et al defines sensing as the ability to recognize competitors' action, consumer preference changes, economic shifts, regulatory and legal changes, and technological advancements (2006, p. 121).

Speed is the ability to carry out tasks and operations in the shortest possible time (Sharifi & Zhang, 1999, p. 17; referred by Walter, 2021, p. 360). Sub-capabilities are; quickness in new

products' time to market; quickness and timeliness in product and service delivery; quickness in operation (short operational lead times) (Sharifi & Zhang, 1999; referred by Walter, 2021, p. 360-361).

Flexibility is defined by Sharifi and Zhang as “*the ability to carry out different work and achieve different objectives with the same facilities*” (1999, p. 18; referred by Walter, 2021, p. 360). Types of flexibility are product volume flexibility, product model/configuration flexibility, organization and organizational issues flexibility, and people flexibility.

Competency is the “*abilities that provide a company with productivity, efficiency, and effectiveness in achieving its aims and goals*” (Sharifi & Zhang, 1999, p. 17, referred by Walter, 2021, p. 360). Sub-capabilities are: strategic vision; appropriate technology or sufficient technological capability; products/service quality; cost-effectiveness; high rate of new products introduction; change management; knowledgeable, competent, and empowered people; operations efficiency and effectiveness (leanness); co-operation (internal and external); and integration (Sharifi & Zhang, 1999, p. 17-18).

The capabilities described should not be considered a permanent organizational state, but rather scalable capabilities that can be realized when needed (Walter, 2021, p. 376). Companies with high agility capabilities enhance and redefine principles of value creation through innovation (Sambamurthy et al, 2003; referred by Walter, 2021, p. 377). The four capabilities flexibility, responsiveness, speed and competence will form the basis for interpreting the empirical findings in this case study.

2.6. Organizational Performance

The literature review by Walter shows that research focuses on increased competitiveness as the main objective of organizational agility. (2021, p. 349). However, increased performance, profitability, an increase in market share, and environmental objectives are also mentioned by some researchers (Walter, 2021, p. 349 and p. 354). Multiple studies support organizational agility's positive impact on a firm's performance (Walter, 2021, p. 354). Tallon and Pinsonneault (2011) found support of their hypothesis that agility was positively associated with firm performance. Firm performance was measured by ROA (return on assets), net margin, and the ratio of operating income to assets (OI/A).

“Firms that exercise these options can expect some future benefit in the form of revenues or profitability, cost avoidance, or higher market growth. Accordingly, when firms are better able to react to changes in product demand, to increase the pace of innovation, or to expand into new markets, they are more likely to experience higher profit, reduced costs, and improved market share at a later point in time (Sambamurthy et al. 2003; referred by Tallon & Pinsonneault, 2011, p. 471).

Sambamurthy, Bharadwaj and Grover equals firm performance to financial performance (2003, p. 239). Much of the research on organizational agility is within the private sector, with the goal of increasing competitiveness. In contrast, this study attempts to explore organizational agility in the public sector, where there is no competition. Research is not that clear about the results of organizational agility in the public sector. Some researchers use outcome, others improvements or performance. The conceptual model for organizational agility by Kirkpatrick et al (2021) shows potential *outcome* on both unit and individual level. Five unit outcomes mentioned are effectively identifying changes in the environment in a timely and effective manner, implementing new processes and procedures, adapting products/services to meet customer requirements, achieving the mission, and having satisfied customers. On an individual level, role clarity, role satisfaction, intent to remain in the unit, and work engagement are mentioned (Kirkpatrick et al, 2021, p. 73). The potential outcomes of organizational agility in Kirkpatrick et al’s article is identified during their literature review and empirically tested through a survey (2021, p. 73). Results from the research show that units that adopt the agility practices were more likely to experience positive unit and individual outcomes, however the environment also accounts for some variance in outcome (Kirkpatrick et al, 2021, p. 77). Another article mentions noticeable *improvements* of organizational agility like service quality, cost reduction, duplicate elimination and reutilization (Carvalho and Sousa, 2014, p. 9). None of these articles addresses performance as such. The literature review on organizational agility in the public sector identified only one article specifically covering the association between organizational agility and organizational *performance* (Jonathan & Watat’s, 2020). However, this article was emergent research. A more recent article revealed the actual results of their research, which actually confirmed a positive association between organizational agility and organizational performance through empirical testing (Jonathan, Rusu, Perjons & Watat, 2021, p. 8).

2.7. Management's role

Previous research highlights management's role in the development of organizational is (Walter, 2021). “[...] *three key functions must be fulfilled in the company regarding agility: planning the realization of agility capabilities, organizing and coordinating the chosen agility enablers, and controlling the target-performance situation*” (Steinmann et al, 2013 as presented by Walter, 2021, p. 382). Management monitors the corporate environment, identifies and ranks the agility drivers (Walter, 2021, p. 381). Management must have the intent to become agile, implement agility enablers and make sure the enablers are aligned. In case of discrepancies, agility enablers need to be adjusted immediately (Walter, 2021, p. 382). The organization's ability to realize necessary agile capabilities must be monitored continuously by management. “*If skills are insufficient, the decision about improvement measures is made immediately.*” (Walter, 2021, p. 382). Management has a key role concerning the monitoring and decision-making function when implementing organizational agility (Mintzberg [1973] 1989), as referred by Walter, 2021, p. 381). Management's role will be discussed further in chapter 6.

2.8. Theoretical framework

The search for conceptual models of organizational agility led to two articles: Kirkpatrick et al (2021) and Walter (2021). There are some similarities between Kirkpatrick et al (2021) and Walter (2021) and their concepts of organizational agility. They both refer to some of the same articles, like Sambamurthy et al, 2003; Sharifi & Zhang, 1999; Overby et al, 2006; Teece et al, 2016. Where Kirkpatrick et al describes antecedents of organizational agility, Walter describes agility drivers, but the meaning of it seems similar; factors or changes in the organization's environment. They both divide these into two main groups: external and internal. In the following, these will be referred to as external and internal drivers. External drivers are those affecting the organization from the outside, in which the organization does not have direct influence. Internal factors are appearing within the organization (Walter, 2020; Kirkpatrick, 2021).

Kirkpatrick et al identifies nine *characteristics* of agile organizations. Sensing, interpreting and responding are in their article referred to as “*routines that characterize agile organizations*” (Kirkpatrick et al, 2021, p. 69). It is further explained that these routines are “*supported by the organizational structure, decision making processes, leader actions, knowledge sharing,*

business processes, roles, and norms and expectations.” Walter identifies four agility *capabilities* and many agility *enablers* and criticizes the unclarity in the use of these terms in previous research (2021, p. 345). Although both articles refer to Teece et al (1997), Kirkpatrick et al does not elaborate on the connection to dynamic capabilities like Walter does. One could argue, though, that two of the characteristics presented by Kirkpatrick et al (2021) are actually capabilities (sensing and interpreting routines, and responding routines) and the others are enablers. For the analysis of the empirical findings in this case, a distinction is made between agility enablers and agility capabilities as suggested by Walter.

With regards to the outcome or results of organizational agility, Walter mentions multiple studies that support organizational agility’s positive impact on a firm’s performance (2021, p. 354), and strengthened competitiveness, but the article itself does not provide as many details. As for Kirkpatrick et al, outcomes on unit and individual level are mentioned as key indicators of organizational performance (Kirkpatrick et al, 2021, p. 73).

As Walter’s model is focused on the drivers in a volatile and unstable market environment, and also competitiveness as the outcome of OA, it’s not a perfect fit for a case study in the public sector. Kirkpatrick’s model does not have the obvious distinction between enablers and capabilities, as Walter’s model has. Figure 4 was developed as an attempt to illustrate the possible combination of the two models from Walter (2021) and Kirkpatrick et al (2021), including the best from each. The analysis of organizational performance is inspired by the article by Jonathan & Watat (2020) and includes reflection on the organizations goal achievement. Figure 3 provides a basis for analyzing the findings in this case study of the OAGN.



Figure 3: Theoretical framework for this case study

3. Research strategy and context

The chosen research strategy is case study, which has been accepted as a valid research strategy within the IS research community for a long time (Klein & Meyers, 1999, p. 68). An interpretive in-depth case study that can contribute to an understanding of human thought and action in social and organizational contexts (Walsham, 1995, p. 74; Klein & Meyers, 1999, p. 67). The research question is formulated as “how”, with the intention to provide insight and understanding to a phenomenon, the innovation lab, from several different perspectives. Figure 4 provides an overview of the research process, inspired by Opland, Jaccheri, Pappas & Engesmo (2021, p. 6). This chapter includes a description of the phases data collection and analysis, reflections on research quality and methodological limitations. A detailed description of the method is provided in Appendix 2.

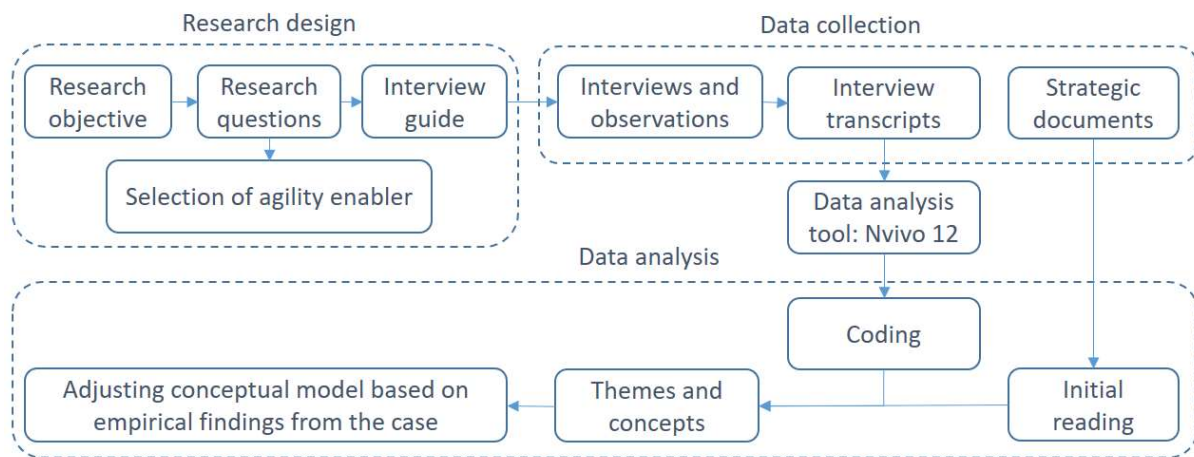


Figure 4: Research process model (inspired by Opland et al, 2021, p. 6)

3.1. Data collection

Primary data sources in this study are interviews, observations and documentation. Walsham recommends using multiple data sources when conducting case studies (2006, p. 323). Table 3 shows a high-level overview of the research sub questions and related data sources.

Table 3: Overview of research questions and data sources

#	Research questions	Data source	Details
1	What can be drivers of organizational agility in a state agency?	Interviews	<ul style="list-style-type: none"> ○ Top management ○ Middle management
		Documentation	<ul style="list-style-type: none"> ○ Strategic documents ○ Law committee mandate
2	How can an innovation lab influence organizational agility in a state agency?	Interviews	<ul style="list-style-type: none"> ○ Innovation lab ○ Project members ○ Middle management ○ IT unit
		Observation notes	<ul style="list-style-type: none"> ○ Lab meetings ○ Project meetings ○ Presentations
		Documentation	<ul style="list-style-type: none"> ○ Lab's intranet site ○ White paper ○ Articles ○ Presentations
3	What can be challenges of organizational agility in a state agency?	Interviews	<ul style="list-style-type: none"> ○ Top management ○ Middle management ○ Innovation lab ○ Project members ○ IT unit
		Observation notes	<ul style="list-style-type: none"> ○ Lab meetings ○ Project meetings ○ Presentations
4	How can organizational performance be measured in a state agency?	Documentation	<ul style="list-style-type: none"> ○ Strategic plans ○ Annual reports ○ Presentations

Ten semi-structured interviews were conducted with innovation lab members (2), top management (2), middle management (3), and others collaborating directly with the innovation lab (3). The interviews lasted between 39 and 92 minutes, with an average duration of 60 minutes. The researcher participated as an observer in nine internal meetings and projects presentations. Documents obtained includes strategic plan for 2018-2024, the yearly plan for

2022, annual reports for 2020 and 2021, in addition to project related documents regarding a hackathon event and a pilot study on artificial intelligence in Lånekassen (Lånekassen, 2022). Data sources and data collection is described in more detail in Appendix 2.

3.2. Data Analysis

The interviews were recorded and automatically transcribed using Teams. The recordings and transcriptions were reviewed by the researcher. Some errors occurred in the transcription due to different dialects, and the transcription was corrected before import to NVivo. The transcribed interviews were first subjected to a high-level thematic coding, inspired by, but not limited to elements in the conceptual models by Walter (2021) and Kirkpatrick (2021), as described in chapter 2: antecedents/drivers, enablers, capabilities and outcome/performance. During the first round of coding, nodes for social mission and innovation lab, were also added. The second round of coding was focused on a more detailed level, dividing the main nodes into several sub nodes. As an example, the node for capabilities was divided into the sub nodes flexibility, competence, responsiveness and speed, based on Walter (2021). During this second round of coding, other thematic nodes were added as needed. One example is the identification of courage as a capability. Courage is not a word explicitly used in theory about organizational agility or during interviews, but rather the term emerged during the coding process based on the researchers impression of the data (Strauss & Corbin, 1998). Also, the interviews and the observation data revealed challenges in the organization. The researcher added challenges as a main node, dividing it into several sub nodes during the coding process, without having any knowledge of theory specifically addressing this topic in advance. The potential link between challenges and agile capabilities emerged during the writing process at a later stage. The purpose of this approach was to let the data speak for itself, without being limited by theory (Walsham, 1995, p. 76). During coding in NVivo, the categorization of the findings appeared more clearly, and with it, a need for an adjusted conceptual model. The purpose of developing this model was to show the similarities and the differences between the empirical findings from the OAGN and the theoretical models presented in chapter 2. Eisenhardt (1989) and Walsham (1995) mentioned theory building as potential output from a case study. The suggested conceptual model is explained during the discussion of empirical findings in chapter 6.

3.3. Research quality

Klein & Meyers suggested seven principles for interpretive field research (1999, p. 72), which is supported by Walsham (2006, p. 326). A reflection of the work performed according to these seven principles will follow. This case study has been a non-linear, iterative process, in which the researcher has gone back and forth between understanding the single elements and topics emerging through the data analysis, and the more conceptual model in theory (the hermeneutic circle). The introduction in chapter 1 and the description of the OAGN in chapter 4 justifies why this organization and the phenomenon of the innovation lab is an interesting case of study (contextualization). The process of conducting interviews and observations are described in more detail in Appendix 2. The researcher is employed at the OAGN. This contributed to an open dialog between the researcher and the interview objects, although with a high focus on privacy and anonymity throughout the study. Semi-structured interviews provided the opportunity to deviate from the interview guide and let the interviewees elaborate on topics of their interest, to give room for new insight. This provided very rich data for further analysis (interaction between the researcher and the subjects).

Interview guides were inspired by former research and conceptual models of organizational agility. However, during the process of coding, new elements and topics appeared. Through mapping the data to these conceptual models, the need for adjustments to these models emerged. The outcome of this case study is therefore an adjusted conceptual model of organizational agility for public sector (abstraction and generalization). The empirical findings and their fit to theoretical concepts of organizational agility was discussed several times with two experts within the IS research field. The purpose of this was to verify that the internal validity arguments for developing a new conceptual model was reasonable (dialogical reasoning). All interviewees were asked to suggest other candidates for interviews who could provide valuable insight. The interviewees were from different levels, departments and units within the organization (multiple interpretations). The researcher had an open invitation to internal meetings for observation during a period of eight weeks. The purpose was to enrich data from interviews with observations of communication style, the climate of collaboration and attitude (suspicion). This last principle provides the researcher with the opportunity to “*read the social world behind the words of the actors, a social world that is characterized by power structures, vested interests, and limited resources [...]*” (Klein & Meyers, 1999, p. 78). According to Klein & Meyers, the suspicion principle is the least developed in the IS research

literature (1999, p. 78). Walsham offered a warning related to the use of these criteria, by stating: “*It is essential that researchers are not misled to confuse process with outcome*” (2006, p. 326). Meaning that there is no guarantee of interesting research results even if all the following the principles are followed.

3.4. Methodological limitations

The perception that case study research in general contains a bias towards verification, is a misunderstanding related to this kind of research (Flyvbjerg, 2006, p. 219). Experience actually indicates the contrary: case studies contain a greater bias towards falsification of preconceived notions than towards verification (Flyvbjerg, 2006, p. 237). In other words, the researcher may end up being too conscious about the risk of verification bias. The researcher conducting this study is currently employed at the OAGN. This could indeed increase the risk of verification bias. However, the constant dialog with two experienced IS researchers during the study have been of great help to avoid the pitfall of ignoring findings that could turn out to be valuable later in the process. Also, the fact that the researcher knows the organization and knows the interviewees at a professional level, enabled easy access to interviewees, meetings for observations and documents for analysis. It also created an atmosphere of openness during the interviews and observations and provided the researcher with richness in data.

The interview data did not provide the necessary empirical findings to support conclusions on organizational performance, and therefore this part of the study is conducted through document analysis. The findings related to this topic are presented as reflections.

Inspiration for developing interview guides were obtained from the identified theory, and especially, the conceptual models of Kirkpatrick et al (2021) and Walter (2021). There is a risk that focusing too much on theory in the preparation of the interviews will make the researcher ask questions and look for findings that fit to the theory, instead of allowing the story unfold from the data. According to Walsham, interpretive studies should “*preserve a considerable degree of openness to the field data, and a willingness to modify initial assumptions and theories*” (1995, p. 76). An example of an interview guide is included in Appendix 4. The interviewees only received main talking points in advance. The interviews were semi-structured, meaning that the interviewees were allowed to talk about their topics of interest, not just the talking points prepared by the researcher. The interviews were automatically

transcribed and transcriptions imported into NVivo for further analysis. The researcher moved back and forth between the theory identified during literature review, conceptual models, and coding of the data in NVivo through several rounds. This was performed as an iterative process to uncover new insights not known to the researcher in advance. Dialog and encouragement from experienced IS researchers were very important during this process, as it provided the necessary confidence to proceed without knowing exactly how the story would unfold.

4. The case

The OAGN is the audit agency of the Norwegian Parliament. The OAGN provides the Parliament with a comprehensive and independent audit of the government. The organization's mandate appears in The Constitution of the Kingdom of Norway:

“to appoint five auditors, who shall annually examine the State Accounts and publish extracts of the same in print, for which purpose the Accounts shall be submitted to the auditors within six months of the end of the year for which the appropriations of the Parliament have been made, and to adopt provisions concerning the procedure for authorising the accounts of government accounting officials” (The Constitution, 1814, § 75 k)

To this date, there are still five Auditor Generals of the OAGN. They are all politicians from different political parties, and are selected by the Parliament every four years. The five Auditor Generals form the Kollegiet, which is an equivalent to a board of directors. The Kollegiet decides which audits the OAGN shall perform, and approves the audit reports before they are presented to the Parliament (Office of the Auditor General of Norway, 2022a). The Office of the Auditor General Act defines the purpose, tasks and the process of reporting audits to the Parliament (The Office of the Auditor General Act, 2004).

The Standing Committee on Scrutiny and Constitutional Affairs in the Parliament receives and processes the auditor reports. The Committee has two key areas of responsibility: matters relating to the Parliament's supervisory authority and constitutional matters. The Parliament's supervisory authority is there to ensure that the Government and public administration implement decisions taken in the Parliament. There are three independent supervisory bodies established to ensure this; The Office of the Auditor General is one of these. Another is the

Ombudsman for Public Administration (Parliamentary Ombudsman). The third one is the Norwegian Parliamentary Intelligence Oversight Committee (The Norwegian Parliament, 2018). The committee provides recommendations to the Parliament based on their review of audit reports from the OAGN (The Norwegian Parliament Rules of Procedure and the Constitution, 2021 § 14, paragraph 8).

The OAGN's duties are to

- audit the central government accounts
- carry out systematic performance audits of the finances, productivity, achievement of goals and effects based on parliamentary decisions
- monitor the management of the state's proprietary interests in companies
- contribute to the prevention and detection of irregularities and errors
- advise the government administration in order to prevent future errors and omissions (Office of the Auditor General of Norway, 2022a)

In addition, the Parliament can instruct the OAG to initiate special audits, which occurs occasionally. The control and audits conducted by the OAGN cover all the ministries, public institutions and state interest in companies (Office of the Auditor General of Norway, 2022b, p. 5). There are three types of control and audits: financial audit and control of national accounts, performance and compliance audits, and annual corporate controls, which to some extent reflected in the organizational structure. There are in total five audit departments in the OAGN, responsible for the primary production; two departments conduct mainly performance audits, whereas one of these departments also conducts the annual corporate controls. There are three departments responsible for financial audits; some units within these departments also conduct compliance audits. A support and development department (SUV) is responsible for IT operation and security, system development, method development and support for all audit types, data science and library services. An administration department is responsible for HR and economy. There is also an international section, and a staff function supporting top management, which includes e.g. communication and legal services (Office of the Auditor General of Norway, 2022b). By the end of 2021, there were 445 employees in the OAGN (Office of the Auditor General of Norway, 2022b).

The OAGN is Norway's supreme audit institution. The environment surrounding the supreme audit institutions is changing, triggered by technological advancements and increased demand

for accountability and transparency (Otia & Bracci, 2022, p. 252). The supreme audit institutions are faced with increasing pressure and expectations from stakeholders to produce quality and impactful audits (Otia & Bracci, 2022, p. 253). Research shows an ongoing technological innovation in private sector auditing, and the same can be expected for public sector auditing, although less research exists to confirm (Otia & Bracci, 2022, p. 252). In 2017, the OAGN established a strategic plan for 2018-2024, stating the vision “*Auditing to benefit the society of tomorrow*”. At the same time, they established a modernization program. The main goal of the program is to ensure the realization of value from current and future development projects, so that the OAGNs products were of the highest quality and that the organization was efficient and adapted to tomorrow’s society (Office of the Auditor General of Norway, 2017b). Digitalization was expected to be a central component of the modernization program. The program should be one of top management’s most important means to reach the goals in the strategic plan (Office of the Auditor General of Norway, 2018, p. 9).

The Innovation lab was originally one of the development projects included in the modernization program, but at that time, their name was the datacenter project (Office of the Auditor General, 2020c). The formal name of the new unit is now SUV data center or SUVDS in short, but the unit itself prefers the name innovation lab and the lab members are referred to as data scientists. The agile manifesto has been a clear inspiration to the innovation lab from the beginning (Office of the Auditor General of Norway, 2020c). The lab was a response to emerging science and technological trends affecting the audit community, in order to improve audit quality and make the audit work more efficient and easier (Otia & Bracci, 2022, p. 261). The innovation lab’s motto is “*We automate the boring things, so you have more time to do the exciting things*” (Office of the Auditor General of Norway, 2020c). According to the lab’s own description, they shall

“contribute to an efficient and high quality audit. This will happen through making solutions and tools for auditing, through better facilitation and accessibility of data, and direct assistance to auditors” (Office of the Auditor General of Norway, 2020c).

This study explores the innovation lab as an enabler of organizational agility, helping the OAGN achieve its strategic goals, despite the anticipated changes in its environment.

5. Results

This chapter focuses on empirical findings from interviews, observations and document analysis. It starts by referring the interviewees own perception of why change is needed, identifying both external and internal factors in the environment. Next, the findings related to the innovation lab and identified challenges in the organization are presented. The last part of the chapter includes a summary and some reflections on how performance is measured in the OAGN, based on document analysis. These elements (drivers, innovation lab, challenges and performance measurement) will be further discussed in chapter 6 in order to answer the main research question of *how can an innovation lab influence organizational agility in the public sector?*

5.1. Identified drivers

The interviews identified several factors that are considered driving forces of change in order for the organization to achieve their strategic goals and fulfill their social mission. Documentation was obtained to supplement information from interviews. The three external drivers identified were: legal mandate and social mission, expectations from the surrounding environment, and technological trends. Two internal drivers were identified: management style and employees expectations.

5.1.1. Legal mandate and social mission

All the interviewees were asked if they expected any changes in the OAGN's legal mandate in the future. The background for this question is an ongoing evaluation of the organization and of The Office of the Auditor General and the Act from 2004. The Presidency of the Parliament states that "*suggestions of changes to The Office of The Auditor General Act should be based on a holistic evaluation and review of The Office of the Auditor General's activities, including the audit's purpose, goal achievement and relevant development trends*" (Innst. 341 S (2020–2021), p. 1.) An evaluation committee is established, and in their mandate the committee is asked to evaluate how and to what extent the OAGN performs according to the social mission, as specified in laws and instructions, and the effects of it (Innst. 341 S (2020–2021), p. 2). Despite that the evaluation committee has been very active during the last months, and several meetings have taken place, none of the interviewees anticipate any significant changes in the OAGN's legal mandate. They all seem very confident that the Parliament is highly satisfied with the organization's performance and the fulfillment of the social mission.

“I think that the impression in the Parliament is that the OAGN is a well-functioning institution. And that they would be very careful to weaken our opportunities. And this goes for [...] the ability to use different audit approaches, right? Or how far we can go when performing an audit [...] and what kind of information we should be able to obtain. And all kinds of protective measures, to ensure that we stay independent and so on. I cannot see any forces wanting to weaken that.” (Interviewee F).

“[...] maybe the most radical suggestion so far is [...] changing the management of the OAGN. And that’s a pretty big deal. [...] because that also involves the role of the Auditor General and the Secretary General. [...] I think, other than that, there will be minor adjustments in the wording of the law, to make it more up to date and modern [...]” (Interview F)

“We see some challenges in the current law and instructions. And things have changed during the last 20 years. So I get the feeling that it will involve some adjustments here and there. (Interview H). The potential conflict between being the Parliament’s independent control body and providing guidance to the state administration is a discussion welcomed by several interviewees.

“I hope our interpretation of the mandate and social mission can evolve. [...] That we can [...] turn towards being more of a team player than an opponent. A clearer perspective of improvement, taking more action related to some central trends for the future, being a little more proactive. I think we can do that within a fairly fixed mandate and social mission [...]” (Interview B)

“We say that we are concerned with improvements, but as of now, we don’t really succeed in practice. We do talk a lot about it, but in the end, there is not a lot of focus on it anyway. Rather a high focus on [...] criticizing.” (Interview H)

The evaluation of the organization and of The Office of the Auditor General Act are commented in the annual report of 2020. *“To maintain its legitimacy, the Parliament’s subordinate bodies must also be modernised and adapted to the present. The review and the subsequent debate are healthy signs of a democracy.”* (Office of the Auditor General, 2021a, p. 23).

5.1.2. Expectations from the surrounding environment

In a speech at the OAGN's 200-years anniversary in 2016, the leader of the Committee on Scrutiny and Constitutional Affairs addressed the culture of trust, established through generations, as one of the conditions for the welfare, social peace and open democracy. This makes Norway one of the best countries in the world to live in. He stated that OAGN should have their share of credit for this “[...] *the OAGN's most important social contribution is to conduct audits to establish trust. And that is no small social contribution. Without trust, no true democracy.*” (The Norwegian Parliament, 2016). He went on saying that a modern, specialized and complex state administration requires another type of guardians than before, referring to the OAGN as guardians (The Norwegian Parliament, 2016). This statement expresses an expectation of change, both in the government and its agencies, and in the OAGN, as a control body for the Parliament.

According to one of the interviewees, the Parliament have been mostly interested in audit reports that can be used for political accountability and political opposition. And also, they have a very strong interest in the rights of weak groups in society. However, they do not express a very clear opinion about what the OAGN should or should not do, how or why (Interviewee C).

“My impression is that, if you think about the general public and the Parliament and so on, they are quite satisfied. Well, at least the Parliament. Historically, they haven't been interested in what they could have had, or other opportunities [...] For example, they have been positive to the changes in Document 1 and other changes we have suggested.” (Interviewee C).

“We have always been very concerned with the Parliament's opinion. And I don't think that's where the most innovative expectations come from. At least up until now [...] I don't think the most innovative feedback comes by just asking the opinion of The Standing Committee on Scrutiny and Constitutional Affairs.” (Interviewee B)

One of the interviewees mentioned that the members of the Standing Committee of Scrutiny and Constitutional Affairs changes throughout the years, and their focus could also change. One example is that the committee some years ago expressed that they did not want as many audit reports, because they did not have the capacity to process them all properly. However,

later committees have not expressed the same. In addition, the committee's members have different backgrounds and interests, and they do not always agree. This can make it challenging to understand the Parliament's opinion. "[...] you need to stick to the majority, right? That's what we do." (Interviewee C).

There is a strong tradition of distance between the Parliament and the OAGN. The Parliament process the OAGN's budget and their annual report, but beyond that, the Parliament does not show a great deal of interest in the day-to-day operation of the OAGN. (Interviewee C). In 2021, there was negative media coverage about the collaboration between the OAGN and the Parliament. A series of articles described on how the Parliament had tried to prevent the OAGN from conducting audits of the Parliament administration. (Torset et al, 2021; Ekroll et al, 2021a; Ekroll et al, 2021b). Despite these differences, the committee has not commented or expressed any serious concerns about this to the OAGN. (Interviewee C).

"So this is a robust arrangement. A stable arrangement. In a way, when it comes to our day-to-day operation, we can call them a passive owner. This is very different from, say, a ministry and a government agency. A big difference. Keeping an arm's length distance is the tradition." (Interviewee C).

The interviewees were asked about expectations from other stakeholders in the environment surrounding the OAGN. As expected, the Parliament is viewed as the most important external stakeholder. The committee evaluating the organization and The Office of the Auditor General Act is mentioned both as representatives of the Parliament, but also as another external stakeholder. This is probably because the committee participants are working on behalf of the Parliament, although they are both experts and politicians. *"The committee is, as far as I can tell, for the most part satisfied and impressed."* (Interviewee F). Other external stakeholders mentioned are the government agencies and the ministries:

"[...] it would be exciting to [...] ask the government agencies or ministries that are most forward-leaning. Listen to their expectations and how they perceive us, and what they think is important for the OAGN going forward. I think it would be exciting to know their thoughts and perspectives." (Interviewee B)

Several interviewees mention journalists and the press as an important external stakeholder. The mentioned article series in *Aftenposten* from 2021, confirms the journalists interest in OAGN and their role. One interviewee stated that the press have been supportive of the OAGN. (Interviewee F). Some of the audit reports have received a lot of media coverage, sometimes even quite unexpected. Examples mentioned are Document 3:11 (2017-2018) about object security and Document 3:6 (2019–2020) about the fishery sector, both of which received massive media attention. (Interviewee F). Another interviewee points out that the press is often mostly interested in highlighting our criticism. This could sometimes tend to be a bit tabloid. (Interviewee H). This is further explained as a kind of a conflict of interest “*[...] as a professional environment, we are [...] interested in [...] getting our investigations done and actually contributing to improvements.*” (Interview H).

Only one of the interviewees mentions expectations from the general public, or the citizens or Norway as potential stakeholders, and explain that some people might be a bit afraid of the OAGN. Also, referring to some of the cases in the media during 2021 about the Parliament’s administration, the interviewee continues from the perspective of the citizens;

“Viewed from the outside [...] I would think of it as very strange that journalists find these big errors in the public administration and not us. Therefore, I think we have kind of a communication challenge when it comes to describing our role and journalists’ roles. [...] we would have a much greater impact if these things had come from us and not from the journalists. I think we might lose credibility by going in afterwards, checking things out.” (Interview J)

It is also mentioned that the audit reports can be used by employees in government agencies to gather support for either funding, or resources to do some necessary measures, like information security measures. They can use the OAGN’s audit reports to their own benefit, by saying to management: “*We need to do something, or you will get criticism from the OAGN next time as well*” (Interviewee J). This can actually be a positive outcome from an audit, at least for those located in lower levels of the organization. However, the interviewee also points out that “*I’m not so sure that this is equally interesting for the top management, being criticized in the newspapers for not having control [...]*” (Interviewee J).

On a more general level, several of the interviewees highlight the importance of understanding how the surrounding environment perceives the organization; *“Well, we are definitely affected by our surroundings. Of course, we are. [...] Many people say that we are a bit introverted, but I believe we are affected by everything coming from our surroundings, in a way.”* (Interviewee H).

“Yes, the new General Auditor is very clear on that [...] He wants to talk to people about their expectations of us, how we solve our tasks and what we should focus on. [...] And then there are these goals for the financial audit of the future, which is currently being discussed, where the topic of expectations from external stakeholders have also been highlighted. We actually need to know more about the expectations in our surrounding environment. So yes, I think something is definitely about to happen here” (Interviewee B).

In their annual report of 2021, the OAGN highlights the challenges that Norway as a society is facing in the future. *“Climate change, an aging population and reduced income from the oil industry are examples of this. This leads to new and great demands on the public administration.”* (Office of the Auditor General of Norway, 2022b, p. 25). Increased spending of health and welfare services and pensions will increase the funding challenges. A smaller proportion of the population will be in a working age. *“This will increase the need for the public sector to utilize their resources in a good way. [...] The Office of the Auditor General plays an important role for the improvement and transformation of the public sector.”* (Office of the Auditor General of Norway, 2022b, p. 25).

The desire to contribute to improvements in the public administration is also identifiable in the interviews. As an example, one interviewee mentioned that the newly appointed General Auditor has suggested arranging a yearly seminar, inviting external stakeholders, like politicians, public servants, government agencies and the press. Presenting what the OAGN has been working on the last year, and this way:

“[...] make it more visible that we can contribute to improvements. Or contribute to the transformation that is needed in Norway, when it comes to climate questions, economy. Because the demographic is changing, with more elderly. The topics highlighted in Meld. St. 14 (2020–2021) Long-term Perspectives on the Norwegian Economy 2021.” (Intervju H).

5.1.3. Technology trends

Interviewees explain that some years ago, there was a high pace of technological development going on all over the world. Cloud solutions was mentioned as one example, completely unknown in the OAGN at that time. Some employees saw that there were some big opportunities to make use of new tools and new programming languages, which could potentially increase both efficiency and quality in audits, and provide a better basis for the audit conclusions. Several interviewees remember observing how the big private audit companies were already working on these things. The argument for going forward was that the OAGN had to pay attention not to fall behind. (Interviewee C and D).

“At the time [...] there was this technological optimism. That’s when we were told that in ten years, everything will be self-driving, right? You can just sit there and make a call, and then a drone comes, right? With a pizza and a beer. [...] That optimism is a little lower now, but at the time it was very much like: this is actually happening now.” (Interviewee F).

“[...] we realized, well actually in dialog with both the manager of the innovation lab and a few other people, that there were a lot of technological opportunities that we hadn’t pursued” (Interviewee C). In the period between 2015 and 2017, there was quite a big push towards more open data, according to interviewee E. That opened a great potential of obtaining data that was previously not available. It increased the possibilities for many analyses, like using geo data, which was almost unheard of ten years ago. (Interviewee E).

“We used to hire consultants to develop relatively simple analyses for us, which were included in our audit reports. We had no idea how they did it. Suddenly, it was possible for us to do it ourselves, with our own tools. Why outsource analytics to external consultants if we can build this competence internally?” (Interviewee E).

The topic of artificial intelligence and machine learning appeared in several of the interviews, as an exciting trend that the OAGN should pursue going forward. *“We could focus on artificial intelligence and machine learning [...] instead of other audit projects. So, really, we have every opportunity to put the topics we want on the agenda”* (Interviewee B).

Since 2017, supreme audit institutions in the UK, the Netherlands, Germany, Brazil, Finland and Norway have formed a collaboration network for exchange of experience between countries. According to a whitepaper developed by these countries, the public sector is increasingly using AI systems, based on machine learning models, to improve services and reduce costs (Office of the Auditor General of Norway, 2020a).

«SAIs should be able to audit ML-based AI applications in order to fulfil their statutory mission and to assess whether use of ML contributes to efficient and effective public services, in compliance with relevant rules and regulations» (Office of the Auditor General of Norway, 2020a).

Just recently, the countries met and agreed to increase the level of ambition for the network (Office of the Auditor General of Norway, 2022f).

5.1.4. Management style

One of the interviewees highlights that for the organization to become more forward leaning, it is essential that the top management be interested. (Interviewee B). In January 2022, the Parliament appointed a new General Auditor. Several of the interviews show that this has had quite an impact on the organization. As one interviewee puts it: *“He is the strongest impulse of change we have ever experienced.”* (Interviewee F).

“The new General Auditor came in like a whirlwind. [...] with an idea that we must be clear about our priorities. We need to be more a team player than an opponent. We must contribute to streamlining the public administration. [...] we need to be more proactive.” (Interviewee F).

One interviewee highlights that the General Auditor has put a lot of emphasis on the term “benefit to the society” from the OAGN’s vision.

“[...] and he really means it, it's not just talk. Because, often you might say that you want to provide guidance and benefit the society. In reality, what is actually rewarded is when you criticize, right? However, he really wants an open dialogue. He wants to listen to the opinions of the public administration about how we do things. He wants to

make changes for us, wants us to be considered useful. I believe that will be his biggest contribution to the development and change of the OAGN.” (Interviewee F).

Interviewee C explains why there is a need for change in the OAGN. Up until 2014, the organization just grew bigger. At some point, there were over 500 employees, and there were few economic constraints. Even so, the interviewee is quite clear that management cannot rely on this to continue in the future. Management's attitude should rather be that nothing lasts forever; *“My thought has always been that we need to act like we are in a competitive situation [...]”* (interviewee C). Management needs to be able to argue that the OAGN is a modern organization, keeping up with the trends:

“If somehow [...] it came out that [...] it was obsolete, imprudent, incompetent or something of the sort, or let’s say that you acknowledge that you have a challenge and seem to do nothing about it... then you could end up on a slippery slope.” (Interviewee C).

The interviewee continues by explaining that *“[...] transforming, changing, developing. It is what I came here to do [...], to increase the development pace [...]. That has actually been my mission all along.”* (Interviewee C). In addition to questions about the motivation for change in general, the researcher also asked about the motivation for establishing the innovation lab in particular. Interviewee F remembers the beginning of the innovation lab, when they presented some applications they made and said that they wanted to use cloud solutions. Cloud was back then still unknown to the organization. The innovation lab explained the possibility of buying applications and machine power if needed. Interviewee F remembered thinking that this was just brilliant. *“[...] I was basically very positive, because I thought: this is the way to go. And I need to support these people, these initiatives.”* (Interviewee F). There were others in the organization who also had the same way of seeing things, and who agreed on the need to digitalize and streamline and “datascientifisize” the organization. Interviewee F says he viewed the innovation lab’s efforts as *“[...] initiatives in our organization that were very right with regards to understanding the significance of handling information in new ways, and they must be supported.”* (Interviewee F).

5.1.5. Employees expectations

The researcher asked questions about the antecedents of the innovation lab to all interviewees, to get an understanding of the motivation behind this initiative. According to interviewee D, two employees from SUV started talking about how they were both very dissatisfied with the development in the OAGN. *“We felt like very little happened, especially on the technology side.”* (Interviewee D). The idea of an innovation lab originated from a presentation by NAO at a EUROSAI seminar in Haag in 2016. NAO explained that they were working on how to make data more accessible to their performance auditors. They had started looking at new technology, like R and showing it off in a Shiny-app (Interviewee E). A representative from the OAGN was present at this meeting.

“I was really very fascinated by the way they worked, the ideas they had, what tools they had begun to use. I was very curious [...] I talked to some colleagues in the OAGN: [...] this sounds very, very fun, it's incredibly exciting, we need to learn more.” (Interviewee E).

“The OAGN in the Netherlands hosted a seminar about something they called data science, which we had barely just heard of. That was kind of cool. We agreed that [...] should attend [...] Apparently, it was incredibly exciting. [...] It had been fantastic, a complete paradigm shift related to how we had been thinking about development in a supreme audit institution and the possibilities” (Interviewee D).

After that, the initiators of the innovation lab found out that *“we just can't go on like this anymore [...] something needs to happen here”* (Interviewee D). Following these initial conversations, they started looking at how R might be utilized. At this time, one of the lab members took a course of big data at London School of Economics, who were also using R in their courses. They contacted NAO and went to London to learn more. Their thought was *“Wow, there is a big universe of opportunities, which we need to look into. And from that point on, the ball started rolling [...]”* (Interviewee E). It was a solid argument that NAO, which is the National Audit Office in England, had already established such an environment, as *“NAO is recognized as one of the best general audit offices in the world and for good reasons.”* (Interviewee D). Interviews confirm that employees from the support and development department initiated the innovation lab, with clear support from the top management.

A more general point mentioned during one of the interviews, was that new employees in the OAGN have completely different expectations about technology than were the case just a few years ago. This goes for the expectations of what they can do, what applications they can use, and what tools that are available to them (Interviewee E).

5.2. The innovation lab

This section will provide insight into the startup of the innovation lab, their journey from a development project to a permanent unit, their work methods, capabilities, and collaboration with the rest of the organization.

5.2.1. The initiative - how it all started

Interviewee D explains how the innovation lab was pitched to the OAGN top management. *“We simply asked management if the three of us could have a year off. [...] one year with complete freedom to do exactly what we want”* (Interviewee D). The innovation lab members had some visions about what they wanted to achieve, but no specific tasks, no clear expectations from management of what they should do. *“Let’s have one year, and we will really try to do something that matters to the development of the OAGN”* (Interviewee D). Two months after the project was decided, the first product was ready to launch. *“[...] then people started to realize “Wow, something is really happening here. [...] So this was how it all started”* (Interviewee D).

According to interviewee D, the innovation lab did not spend the first three months just planning what to do. *“We didn’t write any plans or documents. We just went ahead and made things”* (Interviewee D). But even though it may have appeared as though they didn’t have a plan, they kind of did. The plan was to copy this report search solution, originally developed by NAO.

“At that time we had contact with NAO, which already had this kind of unit. They made something called the back catalog analyzer, which was this search-thing for old reports. So we had an idea that this would be the first product in our innovation project. And we received some R-code from NAO, showing how they made this back catalog analyzer” (Interviewee D).

A couple of other products made by the innovation lab in the early days were mentioned during interviews as examples. An app called “Folk på tinget” (“People in Parliament”), presenting all the questions asked by the political representatives in the Parliament. This app was actually a result of the innovation lab participating in a hackathon arranged by the Norwegian Mapping Authority (The Office of the Auditor General of Norway, 2017a). Also, an app called ‘Styredokument søk’ (Board document search) was mentioned. This app analyzes all board documents from the Norwegian health sector. (Office of the Auditor General of Norway, 2022c).

5.2.2. From a development project to a permanent unit

From January 1st 2019, the innovation lab was organized as a permanent unit within the support and development department (SUV). Prior to that, it had been a project within the modernization program for about a year (Interviewee D). The lab members prefer the name innovation lab, although their formal name is SUV Data center or SUVDS in short. The innovation lab has grown from being a project with three members, into a permanent unit within SUV, with six employees (Interviewee D).

The interviews provided an understanding of the process from being a project to a permanent unit. The innovation lab should never have been established as a project in the first place, according to interviewee G, as there were no expectations of delivering something specific. The modernization program was responsible for coordinating and following up on status and deliverables in development projects or initiatives. However, the innovation lab did not really have any predetermined tasks or deliverables. *“They received new tasks all the time, right? Or requests. So there weren't any deliverables.”* (Interviewee G). To have them as a permanent unit was considered more appropriate. *“We wanted to strengthen our competence in this area. So actually, it has always been a unit working on development tasks or analytical tasks”* (Interviewee G). Establishing a new section does not happen very often in the OAGN, but the innovation lab did not really fit into the existing organizational structure either (Interviewee G). Other interviewees also confirm this agreement of establishing a new permanent unit *“[...] and then we started talking about establishing a new unit. And I thought that seemed like an appropriate next step”* (Interviewee F). The innovation lab itself was more skeptical about becoming a permanent unit. They feared that this would formalize things even more. *“When*

things get formalized, there is a risk that you become a more bureaucratic unit in a big bureaucratic organization. You may lose that [...] innovative, entrepreneurial spirit in a way. So yes, I was a little worried” (Interviewee D).

The interviews indicate that the lab has indeed managed to keep their innovative and entrepreneurial spirit, going from a project to a permanent unit (Interviewee D). Also, one interviewee explained that establishing a unit is just the way you have to do things the OAGN *“[...] if you want to work on something over a certain period of time, including innovation and development activities, then this is very difficult to achieve without being formalized”* (Interviewee D). If the lab had continued to be a project, with participants borrowed from other units, there would always be a risk of these resources being withdrawn or re-prioritized to other tasks. Now, the lab has complete control of their own resources. What to do, what *not* to do and how to work (Interviewee D).

One of the interviewees reflected on how not just the OAGN, but also the entire field of data science has grown since the early days of the innovation lab in 2017:

“Well, this is not exactly unique to other places than in the OAGN. I mean, many organizations have these kinds of units now. [...] The field has grown enormously since we started. You can see that clearly when we are recruiting, there is a much wider palette of candidates. [...] There is higher education on the field now [...] This field has kind of grown up, and we have grown with it. Because we were quite early. [...] I would definitely say that we were, but the field is much more mature now” (Interviewee C).

Since the innovation lab is part of SUV, the lab manager is also a part of the management group in SUV. For the other managers in SUV, this provides insight into what is going on in the innovation lab and how it affects the other units in the departments (Interviewee B). The new General Auditor has stated that he is very interested in the use of machine learning and artificial intelligence in the government sector. This is something that the innovation lab interprets as an opportunity to expand the innovation lab with even more people (Interviewee D).

5.2.3. The innovation lab's work methods

The innovation lab started early on with the intentions of working agile, with these small, short sprints (Interviewee E). The Agile Manifesto and the principles behind it, is kind of a leading star for the innovation lab.

“[...] you produce stuff, use most of our time doing that. Talk to people, work interdisciplinary. [...] We have limited interest in documentation, hence more time for production. [...] Technology is about tools, but we are not very much into IT as such” (Interviewee D).

The innovation lab has morning meetings two times a week. According to interviewee D, these are short meetings with no fixed agenda, just topics like *“What happens now? Who does what? What needs to be fixed now? Any fires that need to be put out? Anything the manager has to fix? Someone the manager needs to talk to? Anything that needs to be done? That kind of dialogue”* (Interviewee D). They also tend to spend as little time as possible doing administrative tasks.

“So yes, we try to work based on agile principles. Or SCRUM might be more accurate. You know, that's something I did very early, I read a book about SCRUM [...] It was actually quite useful. It works. But now I've found that working SCRUM-like... I mean, we don't follow that methodology very strictly. [...] We don't have SCRUM masters and such [...] But the principles are of great inspiration. However, we have found out [...] that working SCRUM-based in such a bureaucratic organization. It can be quite hard. So we work kind of ... let's call it agile, in a very bureaucratic organization. That's not always easy” (Interviewee D).

Speed was a big focus for the innovation lab, especially in their early days. *“To make something fast, get some quick wins”* (Interviewee E). The innovation lab's first product was a report search engine, which was first presented just a couple of months after they had started.

“This was prior to the new web pages and the availability of documents we have now. And it was an idea of being able to do something very, very, very fast. We received some code from NAO, to get a kick-start. We saw what functions they had used, which

packages they had used, how they had structured it, and then we tried to model based on that” (Interviewee E).

The agile manifesto was developed by seventeen experienced system developers more than twenty years ago (Beck et al, 2001), and has been adopted by system developers all over the world. Observations confirm that the innovation lab is clearly inspired by the agile manifesto, like working software over comprehensive documentation or responding to change over following a plan (Beck et al, 2001).

5.2.4. The innovation lab’s capabilities

The competencies mentioned as necessary to work in the innovation lab were data analytics, machine learning, AI, quantitative analysis, statistics, programming. Preferably, you should have a degree from social science, but it is not a requirement (Interviewee D and E). To be a data science environment, all members of the lab need an understanding of applied data analytics to some extent. Interviewee D explains what that means:

“Being able to quickly understand what the auditors need, how they work, what kind of problem they need solved, what kind of problem they are struggling with [...] it’s not about how to optimize a database. It’s about how to facilitate the use of data, understanding the user needs. And to understand what people need [...] I think an analytical background is very useful” (Interviewee D).

On the topics of artificial intelligence and machine learning, both interviewee D and E highlight the need for knowledge on quantitative analysis, like regression. *“To learn about machine learning, without any prior knowledge on quantitative modeling...That would be very hard”* (Interviewee D). The innovation lab has one employee with a background from physics. Interviewee E states that this probably is the most relevant background for working with machine learning, as you need to use heavy statistics, and need deep mathematical understanding (Interviewee E). They also need programming skills, but not like in heavyweight development.

“[...] not in the sense that you have made apps for mobile phones or done hardcore IT development. [...] but rather having an understanding of programming and being able

to use languages like R and Python. Very suitable for those who want to use it in a professional context, but you wouldn't be able to make the most genius, perfect desktop apps. That's not what we are doing" (Interviewee E).

"[...] everything we do is about technology, obviously. [...] But none of us have an IT background. We have one sociologist, two political scientists, one economist and one physicist. That's it. That's not to say that we couldn't benefit from having an IT person" (Interviewee D).

One of the interviewees explained why they do not look for IT competence *"I have nothing against people from informatics. Some may think that we are very anti-informatics people"* (Interviewee E). However, the idea is rather that you need a combination of three components; one of them is programming/IT skills, the second is statistics and the third is professional competence, like social or political science or economics (Interviewee E). Interviewee C explains what makes the innovation lab unique, is that their competence is in the interface between technology and audit. *"It is a data analytics environment, technologically much more light-weight than system developers and very much toned into understanding what the auditors might want and need"* (Interviewee C).

Their formal competence is not the only thing that stands out when interviewing and observing the innovation lab. To work in the innovation lab you should also have an entrepreneurial spirit, a certain amount of risk appetite and be comfortable or even thrive in a bit of chaos (Interviewee D and E).

"[...] wanting to throw yourself into the unknown, to be a bit pompous. We work with complicated stuff. We don't want to work with the easy things. We want to work on stuff that are unfamiliar, new and that has a high risk of fucking up, right? That's the thing" (Interviewee D).

"[...] we have this vision about what we are doing and why. However, from the outside, I'm sure we can appear a bit unorganized and messy [...] But that's kind of the deal. I mean, if you know where you are going all the time, what the goal is and the endpoint of some activity. Then you are no longer doing innovation, right? You are implementing [...] That is not what we are doing. We are trying out stuff that may or may not work."

We don't know that in advance, and that's the whole point. That's why it is fun, because it involves risk" Interviewee D).

Another interesting point is the innovation lab's confidence and courage from the very beginning. *"If anyone else in the OAGN can do it, then we shouldn't"* (Interviewee D). This is something the innovation lab is very clear about; they want to do things that no one else can do or things that have never been done in the OAGN before. The launch of their very first product in 2017 is also a good example of their confidence. At this point, the innovation lab experienced that they did not get as many requests from the rest of the organization as expected.

"We had a big launch by booking the conference room and inviting everyone. And I cannot remember if there was cake, but usually, there is cake. Someone always orders cake [...] And we kind of stretched it, we sold more than we actually had [...] But there was something about [...] showing very early that we can do something useful" (Interviewee E).

The purpose of it was that people would start getting ideas of what more they could do. After the launch of the report search engine, the situation changed. Some of the requests were like *"We have these datasets, can you do something with it?"* (Interviewee E). Soon this generated more ideas and requests.

The interviews leave an impression of courage, and a willingness to make untraditional decision. One example was the innovation lab's hiring of a person with a background from particle physics. During one interview, this was referred to as *"just completely wild in an organization such as this"* (Interviewee F), although stated in a positive and enthusiastic way. The innovation lab have a philosophy that trying and failing is better than not trying at all. These are some examples to illustrate:

"[...] we have the guts to do something for the very first time. Because it's a big risk. [...] It means that you will fail. You make stuff that doesn't come out as you expected, you do things that aren't always very good on the first try. You trip and you make mistakes, there's always a risk of that. Of course, we do whatever we can to avoid it, but the willingness to take risks, the risk appetite... I dare say that it is relatively unique." (Interviewee E)

“First of all, you need someone who is a little crazy [...] who won’t be stopped by people saying: No, it’s too hard, this is impossible, or: that’s not how we do it in the OAGN. Because that’s just talk, right? Just a lot of talk” (Interviewee D).

“Perhaps that is what makes us unique [...] compared to the rest of the OAGN, the willingness to throw all the old stuff out. Sometimes, maybe a little too eager. However, the idea of constantly having the opportunity to improve, learn new things, try out new things, and throw out the old. To dare being [...] incompetent.” (Interviewee E).

“[...] there have been situations where I have just said ‘fuck it, we just do what we want and don’t tell anyone. I’ll take the responsibility for it. If people get angry, just let them be angry’ [...]” (Interviewee D)

“[...] you are employed in the public sector. What’s the worst thing that can happen, if you fuck up? [...] It’s not like you will be fired” (Interview D)

An example related to the use of machine learning in the audit process illustrates how the organization is willing to accept a certain amount of risk. The plan was to use classification algorithms. The innovation lab knew that it was possible in theory, but had never used it on this kind of data before. There were many other obstacles to overcome, which were explained to the audit team and to management. They accepted that the innovation lab could not guarantee any usable outcome. However, they found it better to take the risk and accept that it did not work than not doing it. This is described as a turning point, showing a risk appetite that had not been observed in the organization before. (Interviewee E).

5.2.5. Interdisciplinarity and collaboration

Working in projects with participants from different professional disciplines is highlighted by both the innovation lab and project members as something very valuable. The innovation lab does not have the necessary professional competence to solve their tasks on their own. They are completely dependent on the professional competence of the auditors. One of the interviewees explains the value of combining different competences *“When you get it right, there is enormous potential. [...] When we combine data analysis, the products we make and the professional competence out there, we can make pretty unique stuff. We use data in completely new ways” (Interviewee E).* Some of the auditors may have ideas of cool things to

do, but they do not know how to solve it. By combining the auditor's and the innovation lab's competence, it can actually be done (Interviewee E).

Some interviewees also highlight that the mix of competence from different units enables the achievement of goals in the OAGN, not only the innovation lab.

“My impression was that the innovation lab was kind of a cutting-edge competence center, collaborating with the IT auditors, who also own the solution for data capturing, data security and IT audit [...]. That this environment had very, very high competence, or relevant competence, and we had to support and facilitate it, so that they could help the OAGN in the right direction” (Interviewee F).

The need for collaboration and interdisciplinarity are highlighted for some areas. Auditing artificial intelligence will require close collaboration between IT auditors and experts on artificial intelligence. Also, obtaining relevant data and ensuring that the data quality and formats cover the needs of the organization, so that the data can be utilized in the best possible way (Interviewee B). *“Hopefully, the innovation lab can contribute to innovation in other environments as well, as for instance within data capturing. They may have some experiences and tips that can be of help to others”* (Interviewee B).

One example of interdisciplinary success mentioned by several interviewees is the audit of The Norwegian Agency for Public and Financial Management (DFØ), which is a provider of accounting and payroll related service to many government agencies in Norway (Norwegian Agency for Public and Financial Management, 2022b). The combination of competence from several departments and units contribute to the success of the DFØ audit. The IT auditors understand the business processes, the internal controls and the data flow. They have a deep understanding of the systems from which the OAGN extracts data. They have described the data needed. The data capture team has made the data available. The request to the innovation lab has been about analyzing and presenting the data to the auditors. They have developed applications based on the data and the needs of the rest of the DFØ audit team. (Interviewee B). *“The synergy effect is just huge. I have learned so much. There should be much more of that”* (Interviewee I).

“I think interdisciplinarity is an important success factor to be able to do [...] digital transformations. A very good example is the audit of DFØ. That's what we want, to work with the professionals. However, there needs to be someone on the receiving end that really knows audit. [...] Then you can achieve brilliant things” (Interviewee D).

Several interviewees also mentioned the hackathon event specifically. This was an initiative by the innovation lab, with participants from the entire organization. The event seems to have made quite an impression, and illustrates how the innovation lab's efforts affects the organization.

“They did this hackathon recently. [...] I think there were almost 50 participants. I thought just a few people might show up, and then they were 50! Yes, that impresses me and makes me very happy. [...] now we have a bunch of people who rock and who dares, right?” (Interviewee F)

“I think the hackathon is a fantastic initiative [...] I used to think that: well, that's just something to spend two days on, oh my god! But now I see it as ... all the contributions are so hyper relevant and competence enhancing” (Interviewee H)

“[...] We had many great ideas. We had high enthusiasm. People showed a kind of playfulness that I didn't think existed on that scale” (interviewee E). Some auditors have seen the presentations from the hackathon and regretted that they did not participate. *“It has contributed to a better understanding of how technology can be of help to us. The hackathon was a success and will be repeated, and I'm thinking it is just as relevant for all audit types”* (Interviewee D).

5.3. Identified challenges

Both the interviews and the researcher's observations identify some challenges in the organization: organizational culture, communication and psychological safety, availability of new technology, developing the competence for the future and autonomy versus alignment. The challenges identified through interviews and observations are presented from different perspectives and angles.

5.3.1. Organizational Culture

Being a public organization, with more than 200 years of history, the OAGN may be expected to have quite a conservative organizational culture. According to interviews, *“It’s not unusual. [...] Organizations tend to become conservative. They grow, become harder to change. [...] To start throwing old ideas overboard, that’s tough. Revolution is never easy. [...] challenging what is there will almost always meet resistance anyway”* (Interviewee E). The interviews show that some of the resources involved in development initiatives have been given a hard time by others in the organization.

“Well, there will be resistance in an organization as bureaucratic as the OAGN. When some [...] halfway arrogant guys, with background from performance audit and [...] economy comes along... [...] tramples into people’s territories [...] I mean, of course, it was expected, and it is okay. However, what surprises me is how long [...] because this has lasted for several years now. In the beginning, this was expected and quite okay, right? Skepticism about the unknown, it is scary, and we are trampling into areas that are not our territory. Even accusations about being incompetent and so on, that’s all fine [...]. But, I mean, constant headwind for years. I didn’t really expect that” (Interviewee D).

“There have been times, when I have said: if you really want an innovation lab or people doing real digital transformation, which you love so much, then you’d better do something!” (Interviewee D). Due to the obvious pressure some of these resources experience, some interviewees expressed the need to protect them and defend their initiative, to prevent it from being forced into the more bureaucratic ways of doing things.

“[...] change is always challenging in an organization. And if you initiate something new, there will always be very strong forces against it. So unless management is really clear [...] nothing will come of it. [...] Management needs to state very clearly that this is important” (Interviewee F).

“This had to be given some degrees of freedom, beyond what is normal in OAGN. [...] to figure out how to do things, to experiment and do innovation. There has been a lot of resentment about this, of course. Because it’s not natural that someone is allowed to

go on like that. So it has been necessary to protect that right against many forces, wanting to include it in different forms of planning and control mechanisms, and that kind of classic bureaucratic management” (Interviewee C).

“[...] at that time, just the fact that they were different, that they were not subject to as many rules, that they were able to work more freely, that they were allowed to just decide for themselves how to use their resources, without going through a whole lot of bureaucracy. That was the point. And that’s why I think this has to be defended in an organization such as this, where everything, yes everything, must be according to fixed frames, right?” (Interviewee F).

Interviews also indicate situations where the anticipated behavioral change is just not happening, despite that decisions have been made to do so. This leads to frustration some times *“I had to say: ‘Relax, will you? I’m sure the others will come along eventually’[...]*” (interviewee I). Sometimes it just takes a bit longer than expected to see the actual results *“[...] you get an understanding that we just cannot profit from it immediately. It takes time. But I think they understand”* (Interview A). Another interviewee states that there is lack of discipline and lack of the ability and willingness to actually implement the decisions made, a kind of rematch-culture (Interviewee C).

At a time when people seemed to have accepted the new innovation lab unit, some still expressed frustration. Only this time it was because they did not get the help they wanted.

“It was pretty soon a success and became very popular. What was not as popular was that not everyone could get their services. After a while it was more like ‘Why cannot I get any help?’ And ‘Why does he or she or they get help?’ And ‘Why do they prioritize this and that?’ This is probably what most of the quarrels have been about” (Interviewee C).

However, interviews indicate that what may be perceived as change resistance is rather a sign of miscommunication or that employees just do not see the actual benefits of the innovation lab’s efforts yet.

“There has been some skepticism in the audit departments as well, but not a lot. [...] Some think that it is a kind of sandbox, in which we are just [...] playing around [...] We haven't really met all that much resistance from the audit departments. They have been more wondering, or maybe at worst, a bit indifferent” (Interviewee D).

“Now, there are more questions like ‘What’s in it for me?’ And that’s okay. Then people are trying to relate to their daily work. And that is a question we should answer eventually. When we have played and explored a bit more” (Interviewee E).

This statement indicates a rather positive development in the organization, though.

“Things are happening [...] looking back at where we were... I mean, just thinking back, prior to the pandemic. Many things that were considered super difficult, are not so difficult anymore. The kind of change that has happened and how it used to be... Oh my god, there was... there was so much resistance and questions and critique. And now, no one is asking these questions anymore” (Interviewee E)

5.3.2. Communication and psychological safety

Challenges of communication was a topic appearing often during the interviews, and also something that was visible during observations. One interviewee explained *“A challenge is to communicate to the whole organization what they can actually contribute to. That people understand how to contact them and how to use them”* (Interviewee A). Another interviewee remembered that when first hearing about the innovation lab some years ago, people did not exactly understand the relevance.

“At one occasion, they talked about machine learning and [...] by using the passenger list on the Titanic, who had survived and who had died, you could develop a model to predict, like if you were a man, traveling on third class and this and that... I mean [...] it was all very unclear” (Interviewee I).

Another interviewee remembers the way the innovation lab was first introduced, and the reactions afterwards.

“There was a meeting in the conference room [...] they referred to this nice methodology, and how important it was to have a line organization responsible for the day-to-day operation, and then a unit [...] responsible for challenging the rest of the organization to achieve more, or push things forward [...] Several people reacted to this. I did too. [...] It was something about having a unit disconnected from everything else, just doing what they wanted” (Interviewee J).

Some suggest that there is a need for spending more time talking to people, explaining what the innovation lab can do. *“Talking to the middle managers within financial audit, talking to managers within performance audit, talking to managers in SUV [...]. I think this could have contributed to a better understanding”* (Interviewee D). Two topics often mentioned together during interviews were communication and involvement. Involvement of employees is expected, but take up a lot of time. One interviewee explained that management might have underestimated the amount of communication, process and involvement actually needed. On the other hand, too much involvement may slow down the change processes, as they *“eat up a lot of time, [...] without really getting that much out of it”* (Interviewee C). Also highlighted were management’s role in communication.

“What I have found challenging is the establishment of a new unit, without clarifying the roles and responsibility. I mean, they established this unit, but no one understood their mandate. Or at least we didn’t. I think it’s kind of bad management craftsmanship, not clarifying it so that everyone understands” (Interviewee J).

Several interviews confirm the challenge of communication between the IT unit and the innovation lab, which has led to a lot of frustration on both sides. *“We cannot deny that [...] throughout the years there have been many conflicts with the IT unit, which has been challenged on an extremely large part of their domain”* (Interviewee E). One topic that has been particularly demanding is information security related to the use of cloud solutions. This has been of great concern, requiring management’s attention as there used to be a lack of competence regarding cloud in the organization. *“There has been a lot of worries regarding information security, like: No, we can’t do this and: No, we don’t have the resources to do that [...]. It has been extremely frustrating”* (Interviewee D). Another interviewee stated that *“You can work agile and still inform people about what you are doing [...]. There are different ways of working agile”* (Interviewee J). As of now, there seems to be more collaboration between

the innovation lab and the IT unit than before, and the relationship has developed in a positive direction (Interviewee E). Even so, management has acknowledged the need for action and has recently requested a full-scale evaluation by external consultants: *“To evaluate the whole thing: IT governance, management, organization, everything. On top of that, we must deal with the relational side of this. We will have a thorough process on the whole thing. That must be the solution”* (Interviewee C).

Through observing meetings in the OAGN, the researcher got an understanding of the collaboration and the communication in the organization. First, the communication within the innovation lab meetings during the period of observation was clearly affected by two things: top management held a seminar in March, to discuss next year’s priorities and development projects. The SUV department had suggested several development projects, including one from the innovation lab. Second, a well-known ongoing conflict between individuals in the SUV department seemed to have a peak in this period. This study will not go into details about neither the management seminar nor the conflict. Nevertheless, it provides an important background for the description below.

Observations show that when the innovation lab presents the results of their work, it appears both solid and pedagogical. They manage the art of communicating very complex issues in a simple, understandable way, and yet leaves the impression that the innovation lab competence is very high. In the observed project meetings and joint presentations, there is an obvious mutual respect between project members and the innovation lab. This is also the impression from the interviews of both innovation lab members and project members. All participants express the value of their different competences and actually highlight that as a success factor when collaborating. There are no particular signs of communication challenges at project level.

To get an impression of the working methods and collaboration within the innovation lab, the researcher also observed some morning meetings with only innovation lab members present. The researcher's impression from these meetings is that the communication style within the innovation lab is somewhat harsh. However, the lab members all seems to be comfortable with it. Seeing the innovation lab as kind of a safe zone, where they could express frustration, might be necessary to relieve tension at times. Especially in cases of conflicts, as mentioned. Nevertheless, talking about other people in the organization and other people's work in a condescending way reduces the impression of respectfulness towards other colleagues and their

competence mentioned above. Observation notes about the communication during the lab's internal meetings confirms a high collective confidence in the group, but also low humility.

5.3.3. Availability of new technology

What seems to have been a challenge for the innovation lab for quite a long time, was the availability of the necessary technology and the knowledge of this new technology. Interviewee D explained some examples:

“[...] the searching technology that we started using, like Elastic Search. No one had ever heard of it in the OAGN [...] Dockers, containers and so on, completely unknown. Python was not used. R was not used. Tools for coding like R-Studio, Visual Studio Code not in use. Cloud technology, of course, like Amazon Web-Services was not in use. I mean, we have pretty much fixed all of these things ourselves. So of course it has been a problem” (Interviewee D).

“We are supposed to be a data science unit, an analytical environment. We are not supposed to be an IT environment. However, we needed tools and technology to get started and nothing was available in the OAGN, right?” (Interviewee D). The innovation lab just had to learn for themselves about different technologies and infrastructure in order to use it. *“And IT was like: Well, you're on your own. This is not our responsibility, so you just have to work it out [...] That was kind of interesting”* (Interviewee D). They learned a lot about IT, although they wish they did not have to (Interviewee D). A situation worth mentioning is that when the innovation lab wanted to use Amazon Web Services, the manager actually had to use his own personal credit card to pay for it, because the OAGN could not find any other suitable solution.

Another side to this story is that of information security issues related to using new technology. The OAGN has procedures and processes in place to handle requests for new tools. This appears to have slowed down the pace in the innovation lab. *“Risk evaluation and all the work to make it possible to use all the tools we have been using... I have spent a lot of time doing that”* (Interviewee D). Information security is clearly a topic that concerns people in the OAGN, as the innovation lab has experienced: *“we haven't been deliberately countered, I think, but there have been a lot of concerns related to security [...] Tremendous concerns about what we are doing and what we might be up to”* (Interviewee D). Others express appreciation that there

are someone asking questions related to security “*If everyone had been equally innovative, you could have questioned the information security. So fortunately someone hit the brakes*” (Interviewee I). It could potentially have very serious consequences if some data collected from the auditees went astray (Interviewee G). The innovation lab expected that these concerns would pass, but that does not seem to be the situation.

“I had expected that when people saw that no, we didn’t fuck up the OAGN’s IT network, we didn’t do things that were completely idiotic regarding security, we do actually know a few things...that it would calm down a bit. Well, only partially, it seems. Yes, that has been somewhat exhausting” (Interviewee D).

5.3.4. Developing competence for the future

One interviewee states that the OAGN consists of knowledge workers “*It’s all knowledge [...]. That’s our product and the basis for everything.*” (Interviewee G). Another interviewee describes the ambition:

“[...] we want to [...] be advanced in the use of methods and present the very best. We just had an evaluation of our performance audit from a professor, and they called us the largest social science environment in Norway, right? That’s where we want to be. That’s how we should be viewed” (interviewee H).

One would therefore expect the organization to have a very high focus on continued knowledge development and improvement. Other interviewees mention competence as a significant challenge in OAGN. That is, the organization has low turnover, and employees’ competence is not necessarily in accordance with the current job requirements anymore (Interviewee C). It is interesting that on project level, it seems that lack of capacity is an inhibitor to transfer competence from the innovation lab to the project team, due to the many project deadlines. “*There hasn’t been a culture and tradition to spend time on it in projects. It’s so busy all the time* (Interview H). Project participants stated that they would like the ability to spend more time developing their own skills and knowledge by observing what the innovation lab actually did. If that were the case, they might have learned how to perform some of the tasks that the innovation lab did on their behalf (Interviewee A). Another interviewee also mentioned this point; if given the opportunity and time to learn, their unit might have performed the tasks that

the innovation lab did on their behalf (Interviewee B). The innovation lab mentioned that they are currently doing tasks that external consultants used to do (Interviewee E).

“The purpose is [...] to go in where we can see that it would be appropriate with the use of new, modern technology. Use tools that are much more specialized, and that few in the audit department have the opportunity to learn... or at least learn very thoroughly and well. Because that’s the main problem; it’s not that the people in the audit departments are not skillful enough, it’s rather the opportunity to go really deep into one topic which always gets limited over time” (Interviewee E).

The organization wants to be sharp on the latest, more advanced analytical methods and technology, and the audit departments would like the innovation lab to provide more information regularly *“[...] so we can all benefit and develop”* (Interviewee H). *“After all, we have to remember that we have a core business that needs to benefit from it”* (Interview H). Interviews show that when managers and auditors saw examples of what the innovation lab were able to do, they started approaching them with suggestions.

“[...] then suddenly, some light switches were turned on [...]. With the tools we have, we could automate the job, we can do it in a much shorter time, we can increase quality, right? Without this generation of ideas, there would be slack in the system for a very long time, I’m sure” (Interviewee E).

Interviews confirm that those involved in projects with the innovation lab see other possibilities of using technology than they used to. Although one interviewee mentioned several other initiatives in the organization also contributing to this increased understanding of technology.

“[...] I would also like to missionize a bit for this group, the network for IT auditors. To participate has opened up new ways of seeing things [...] and in 2019 I went to this introduction course. It was all the new employees and me. The combination of that, and being in this network of IT auditors, and being in this project... It has been kind of a rocket. Which haven’t been all that pleasant all the time” (Interviewee I).

The competence of today is not adequate tomorrow (Beckstrøm, 2017, p. 5). One interviewee points out that to be able to stay sharp and develop competence for the future, it may require *“having an innovation lab, arranging hackathons, and [...] do more of those kinds of activities”* (interviewee H). The innovation lab states that they would like to be kind of a nice and friendly

virus, spreading in the organization. This spread has come a long way already, and will probably just accelerate with the new General Auditor (Interviewee E).

5.3.5. Autonomy versus alignment

The innovation lab is clear about how they contribute to improving the organization. “[...] we shall contribute to developing and streamlining the audit work in the OAGN. [...] Our resources and competence should be spent on making the OAGN’s audit work better. More efficient, higher quality. [...] That’s an important base for everything” (Interviewee D). On top of that, innovation is expected. Interviewee D explains what this means for the innovation lab “Everything we do should be technology-driven [...]. We should constantly try out new things that haven't been done before, for the good of the OAGN, to develop the audit work” (Interviewee D).

Some interviewees have raised concern about the prioritizations, as it appears that the innovation lab can decide for themselves which projects to participate in. Several interviewees have expressed that they had to pitch their idea to the innovation lab, to trigger their interest:

“I remember especially on the audit of [...], the interfaces between systems are quite complex. I mean, it is just so astronomical; you cannot do substantial testing [...], there is a lot of internal control testing. We asked the innovation lab for help to verify these reconciliations. But no, that was not an option. And I remember the innovation lab went around missioning very enthusiastically to the rest of the organization, and no one actually understood what they could do for us” (Interviewee I).

“They are allowed to play very, very, very much. If we need anything, we kind of have to sell them our idea. And then, if they find it exciting enough, we might get help. Of course, these resources are scarce, but I have been thinking several times that it seems like there are no prioritizations. Well, maybe that’s a good thing? [...] maybe it’s important for such innovative environments to have freedom to come up with something great” (Interviewee H).

Some question management’s lack of involvement in the innovation lab prioritization. Some of these quotes illustrate this “I know that people are talking like ‘oh, well, they are doing their

thing, but what is really coming out of it?’ [...]” (Interviewee H). Another interview asked “[...] why would you establish an innovation lab, or a data center in my opinion, almost two years before anyone understands what they are supposed to do for us?” (Interviewee I).

“And after a while it was more like ‘who’s actually running this’, right? ‘Why are they prioritizing this and that?’ And ‘we have asked for and didn’t get anything, while those guys did, why is that?’ And others have been like ‘well, they are just playing around, right?’ We’ve had a lot of that“ (Interviewee C).

What may turn out to be of concern over time, is the innovation lab’s autonomy versus the increasing need for management and maintenance of applications developed by the lab.

“It’s typical when starting these kinds of units that you have no history, you have nothing to administrate. You have plenty of time to play with new things, and you haven’t been caught up by reality yet. What happens now is that they understand that they have to spend an increasing amount of time managing the solutions they make. Now they are starting to see that this requires time and resources. In the beginning, there was no acknowledgement of that” (Interviewee J).

“The more good things you make the more [...] time you have to spend on operational tasks. Then you no longer have the time to be innovative and try out new things. That has been a challenge, absolutely” (Interviewee D).

One interviewee describes how the OAGN the last four years have tried to establish procedures for portfolio management of development projects. Development projects are required to follow procedures for project management and portfolio management. The goal for management has been to increase the coordination between projects and ensure value creation (Interviewee G; Office of the Auditor General, 2022e, p. 23). However, at the same time, it is obvious that management considers the innovation lab to be a success. One of the success criteria that several interviewees mention is that the innovation lab has been granted a great deal of freedom to decide both what to do and how to do it. *“You may establish different types of development initiatives, but it doesn’t have to be a project, and that’s what we did wrong for a while” (Interviewee G).* Another interviewee highlights the same thing; that development does not have to happen within projects, but rather that the OAGN should utilize the best

resources in new ways, by using methods that are more non-traditional. Both the hackathon and the innovation lab were mentioned as examples of initiatives that are considered successful, although not defined as projects (interviewee H).

5.4. Performance measurement

The definition of organizational agility, as referred in chapter 2, was “*the capacity to adapt quickly and effectively in response to, or in expectations of, changes in the environment in order to achieve the strategic goals of the organization and fulfil the social mission*”. The aim of this study is to explore the innovation lab as an enabler of organizational agility. However, agility is not the goal in itself for the OAGN. Therefore, this chapter will present the OAGN’s vision and strategic goals, based on findings from interviews and document analysis. Chapter 2 explained how improved competitiveness is the general goal of organizational agility in private sector. Previous research shows that organizational agility is positively associated with firm performance in private sector, and that firm performance often equals financial performance. Performance in public sector is a complex and comprehensive topic and it is not the main focus chosen for this study. However, research on the public sector also confirms positive association between organizational agility and performance. Therefore, the last part of this this chapter will summarize how performance are measured and reported in the OAGN, based on description in the OAGN’s annual reports.

5.4.1. Vision and strategic goals

Interviews and supplementary documents show that the OAGN is very aware of their constitutional role and social mission. Trust, democracy, transparency and improvement of the state administration are some of the words mentioned during the interviews.

“It is an essential democratic control function [...] it’s about trusting the state administration and the government, but also about the balance of power, the principle of parliaments and governments. And it is in a way a constitutional basic function.”
(Interviewee C).

“Our social mission is to ensure a public administration in which people can trust, and which delivers the services that the citizens [...] deserves, of very high quality, so that they can live good lives. Our contribution ensures strong, uncorrupted institutions, a

bearer of democracy, and which ensures that the government and the state administration carries out the decisions made by [...] the Parliament.” (Interviewee F).

“[...] we help the Parliament in their control of the state administration. That is the big picture. [...] we also have a responsibility to the citizens [...] a democratic factor, by contributing to the reduction of fraud, preventing corruption [...] transparency in the public sector. [...] I think that, in addition to reporting to the Parliament, [...] another task for us is highlighting important topics for the public discussion and debate. According to our strategy [...] contributing to improving the state administration through our investigations. [...] The perspective of improvement, contributing to transparency and visibility.” (Interviewee H).

One of the interviewees highlighted a strong sense of purpose with regards to the OAGN’s ability to speak on behalf of the weakest citizens in the society;

“[...] we highlight groups of citizens that otherwise do not receive much attention. For example, when we did an investigation of the services offered to disabled children and their families throughout the country. [...] or the mental health of children and young people, or [...] drug addicts, what is the quality of the services provided to them? [...] We can help by putting things on the agenda.” (Interviewee H).

The OAGN's vision for addressing the social mission is to carry out ‘Auditing to benefit the society of tomorrow’ (Office of the Auditor General of Norway, 2022a). Three primary objectives are defined to achieve the vision, which appears in the strategic plan; Goal 1: The OAG will be society's foremost provider of current and relevant public auditing. Goal 2: The OAG will carry out high-quality audits and controls. Goal 3: The OAG will be an efficient organization. (The Office of the Auditor General of Norway, 2018). The strategic goals are further divided into several sub goals, which will be presented below.

5.4.2. Achievement of strategic goals

OAGN’s annual reports includes a description of the achievement of the strategic goals. It is not the intention to evaluate the potential improvement of performance based on the annual

reports of the last two years. The motivation is rather to provide insight into how performance is measured and evaluated in this particular case.

Goal 1 The OAG will be society's foremost provider of current and relevant public auditing: The Standing Committee on Scrutiny and Constitutional Affairs is the receiver of audit reports from the OAGN. Therefore, comments from the committee, expressing general satisfaction are referred to as proof of achievement of sub goal 1 (The Office of the Auditor General of Norway, 2022b, p. 10). The annual report also refers to the number of times references are made to the OAGN's audit reports during the Parliament's work in 2020. The number has increased from 42 reports in 2020 to 54 in 2021 (Office of the Auditor General of Norway, 2021a, p. 9; 2022, p. 10). This count does not evaluate if the number is satisfactory.

Financial audit is where the OAGN uses most of its resources (Office of the Auditor General of Norway, 2021a, p. 13). The OAGN conducted more than 230 financial audits each year (Office of the Auditor General of Norway, 2021a, p. 11; 2022b, 13). However, financial audit is not mentioned related to Goal 1 in either the annual report in 2020 or 2021. The yearly report of the results of the financial audit to the Parliament (Document 1) is mentioned briefly on the subject of control as "*a very important contribution to the Parliament supervision of the public administration*" (Office of the Auditor General of Norway, 2022b, p. 10).

To identify relevance for the general public, the OAGN sends out a user survey to the public administration every year. The results are referred to as 'generally good', showing that the public administration finds the audits and investigations relevant and useful, and that they are being used for improvement initiatives. There has been a slight increase in perceived benefit during the last years (Office of the Auditor General, 2022, p. 11). A separate investigation has been performed for information on how audit reports are actually used for improvement in the public administration, which shows a potential of improvement (Office of the Auditor General, 2021, p. 11). The achievement of benefit, credibility and relevance for the public has been linked to indicators like media coverage, number of requests for information from both media and other stakeholders and number of visitors at the web site www.riksrevisjonen.no.

Goal 2 The OAG will carry out high-quality audits and controls: On the sub goal of product quality related to goal 2, the annual report of 2020 informs that "*We perform regular quality controls on completed audits and the previous review was carried out in 2019. We assessed*

several financial audits to ensure that they had been conducted according to professional audit standards and guidelines.” (Office of the Auditor General of Norway, 2021a, p. 10). There are no mention of results or assessment of quality for 2020. The annual report of 2021 mentions an external evaluation of five performance audit reports, which was generally positive, although with some improvement points.

The yearly user survey includes questions about the perception of the audit process, including the communication, and the results are referred to in the annual report of 2021 *“The public administration’s perception of the audit process is good.”* (Office of the Auditor General of Norway, 2022b, p. 12). A development project for seamless communication is mentioned in the same section *“By using digital communication, including the exchange of data with the public administration, it is our impression that we meet the expectations of society and those we audit”* (Office of the Auditor General of Norway, 2021a, p. 11).

Goal 3 The OAG will be an efficient organization: The only potentially measurable information related to this goal is the reduction of the full-time equivalents and the number of employees, while production remains at almost the same level (Office of the Auditor General of Norway, 2021a; 2022b). The report does not explain what “production” means. The number of audits conducted could indicate production. However, international involvement and development activities might also contribute to production. The rest of the description related to goal 3 is about the development initiatives initiated and the expected value from these in the future. As an example, the annual report 2020 describes a pilot study on management information. The annual report 2021 describes a development project initiated, to improve management information. *“This will facilitate better decision-making, allowing us to use our resources more efficiently and increase the quality of our products.”* (Office of the Auditor General of Norway, 2021a, p. 11).

6. Discussion

In this chapter, the empirical findings from the last chapter will be discussed through the lens of organizational agility theory. Figure 3 in chapter 2.8, formed the theoretical framework for the case study. Figure 5 below shows how the empirical findings have been mapped to theory.

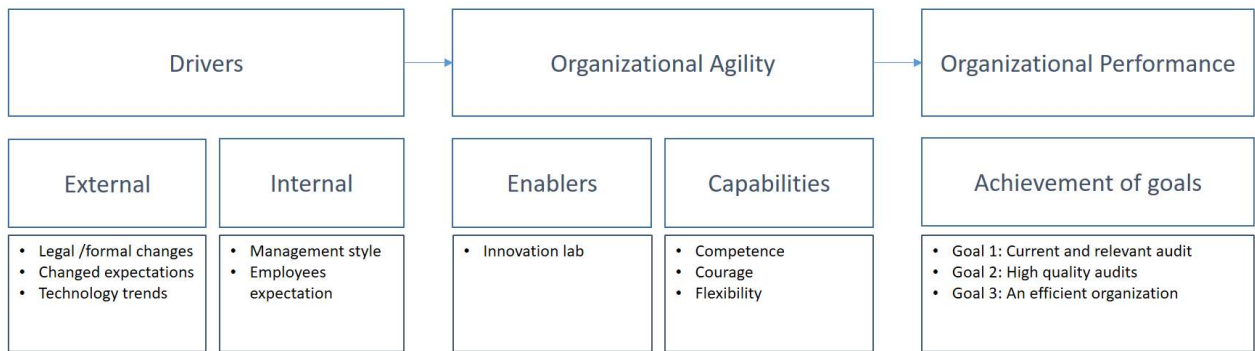


Figure 5: The empirical findings structured according to theory

The following discussion will focus on these elements: drivers of organizational agility (external and internal), the innovation lab as an enabler of organizational agility, identified challenges in OAGN versus agile capabilities from theory, and organizational performance. Management’s role will also be discussed. At the end of the chapter, an updated conceptual model is suggested, inspired by theory, empirical findings and discussion from this case study.

6.1. Drivers of organizational agility

As presented in chapter 2 and in figure 7 above, agility drivers can be both external and internal. Both external and internal drivers were identified in the OAGN, and the discussion below follows this distinction.

6.1.1. External drivers

The OAGN has a very important constitutional role in Norwegian democracy. As a supreme audit institution, they report directly to the Norwegian Parliament on how the government has implemented the Parliament’s decisions. (Stortinget.no, 2017; Riksrevisjonens historie). As such, The Parliament is viewed as the most important stakeholder for the OAGN. Given that, one would expect legal/political pressure and changes to be potential external drivers of organizational agility in the OAGN. In recent years, this has been a topic of some discussions, and the communication between the Parliament and the OAGN received quite a lot of media attention in 2021. (Ekroll et al, 2021a; Ekroll et al, 2021b). A law committee has recently been appointed to evaluate The Office of the Auditor General (Innst. 341 S (2020–2021)). According to interviews, the committee is expected to recommend a modernization of the wording of the

law. However, it seems that the law committee is evaluating the OAGN's fulfillment of their social mission as well. Is this an indication that the Norwegian Parliament is not fully satisfied with the fulfillment of the OAGN's social mission? It must be highlighted that the decision to revise the law is not based on a recent initiative. According to interviews, it has been expected for quite some time, since the current law is from 2004. Except for this law committee, there is no other direct instruction or indication that the Norwegian Parliament or the Committee of Scrutiny and Constitutional Affairs has expressed expectations or put any political pressure on the OAGN to reform or change). Independence is a very important principle in audit, also regulated in The Office of the Auditor General Act § 2. Historically, the Norwegian Parliament has been very concerned with keeping an arm's length distance, not giving the impression that they are instructing the OAGN. However, given the thoroughness of the law committee's evaluation, it is a bit surprising that none of the interviewees actually expect significant changes in the OAGN's official mandate or duties.

In the interviews, one of the questions was oriented towards expectations from the surrounding environment, allowing the interviewees to reflect on what elements might constitute the environment. Interviews show that there is an awareness in the organization with regards to how journalists, auditees, citizens, or other external parties might use, have an interest in or be affected by the OAGN's audit reports. The use of the term stakeholder seems suitable in this particular case, as no interviewee actually used the term customer. When encouraging the interviewees to think back a few years, none of them seemed to sense any particular shift in expectations from external stakeholders. Nor do they expect these stakeholder's expectations to change in the future. The OAGN's annual report also describes the results from a survey among the state administration as "*generally good*", and with an increase in perceived usefulness of audits. What is not described are which questions have been asked, or the response rate. Are there any differences with regards to how the ministries, the large/small government agencies perceive the OAGN? Also, could it be of interest for the OAGN to know how other stakeholder groups, like journalists or the citizens of Norway, perceive the organization? Otia and Bracci state that the ongoing transformation of supreme audit institutions' external environment is changing the demands and expectations of its stakeholders. (2022, p. 253). "*Accountability demands are expanding [...] coming from the citizens, the Parliament, the media, donor organizations, and the international community at large [...] and influences the way auditing is conducted [...]*" (Otia & Bracci, 2022, p. 253).

The audit profession is definitely hit by the digitalizing wave. The Norwegian Institute of Public Accountants confirm this trend. This is the professional body for State Authorized Public Accountants licensed by The Financial Supervisory Authority of Norway to practice as statutory auditors in Norway. (Norwegian Institute of Public Accountants, 2022).

“The audit profession is technology-driven and in constant development. Few things are so unjustified as the myth of auditing being a boring and routine focused profession. Digitalization contributes to fewer routine tasks, and many new and exciting tasks can be expected. The core of audit is the same, but the way the auditor works has evolved enormously.” (Norwegian Institute of Public Accountants, 2022).

The audit profession’s increased focus on digitalization can also be confirmed by the five-year research project DigAudit at the Norwegian School of Business (NHH Norwegian School of Economics, 2022). The focus of the project is the transformation of the audit profession to adapt to the ongoing process of increasingly widespread digital data capture, and to the use of advanced analytics to analyze that data. (NHH Norwegian School of Economics, 2022). Even though NHH’s research is limited to the private sector, the same development can be observed in research within public sector auditing. “[...] digitalization is recognized to be of importance for the future of auditing.” (Lombardi et al., 2015; Hay, 2019; as referred by Otia & Bracci, 2022, p. 253). Technology trends affecting the audit profession in general also affects the OAGN as a supreme audit institution.

Former research has characterized technology as an external agility driver (Van Oosterhout et al, 2006; Sharifi & Zhang, 1999). There is a high expectation for the public sector to both innovate and digitalize, as shown in the white paper on innovation of the public sector (Meld. St. 30 (2019-2020), The Digital Strategy for the public sector 2019-2025 (Ministry of Local Government and Regional Development (2019) and the yearly digitalization circular to the public sector (Ministry of Local Government and Regional Development (2022)). Increased data exchange between government agencies, data science, automatic processing, robotics, artificial intelligence and cloud computing are just some of the topics addressed in these documents. *“Enabling technology, like artificial intelligence, combined with data plays a central role in the transformation of the public sector, in collaboration with private sector, academia and research”* (Meld St. 30 (2019-2020, p. 44). Interviews show that technology trends were among the primary drivers of establishing the innovation lab in 2017.

6.1.2. Internal drivers

Based on the interviews, the internal drivers of agility in the OAGN seem to be the most prominent. One interviewee highlights that the new General Auditor joining the OAGN in January 2022 is probably the biggest driver of change the organization has ever experienced. The OAGN's vision "Auditing to benefit the society of tomorrow", the strategic goals from 2017, and the decision to establish the innovation lab confirm a forward-leaning management style. Kirkpatrick et al found that higher level leaders who redefine the organization's mission, goals or strategy is an internal driver of OA. (2021, p. 69). However, no other specific internal drivers are identified in their study. Walter identified two internal drivers in the literature review that may have similarities; continuous improvement strategy and management style. (2021, p. 357-358). However, it has to be said that a great deal of the articles on OA in the private sector is focused on manufacturing companies, which is quite different from a state agency. Besides Kirkpatrick et al (2021), the backwards search for articles on possible internal drivers of OA from the public sector is unfortunately considered unsuccessful.

Another interesting statement from the interviews was that the OAGN should operate as if they were in a competitive situation to mitigate the risk of being viewed as outdated. Similar views, but to the more extreme can be observed in the case study of a local government in Portugal by Barroca et al (2019). A central focus in their transformation was a more commercial mindset. To avoid trying to change the behavior of existing staff, most staff had to apply for jobs at the council, either their original roles or a new one. In the process they had to go through a behavioral assessment exercise. Their goal was not an agile transformation, but an agile organization. (Barroca et al., 2019, p. 211).

Interviews show very clearly that the innovation lab initiative originated from a few employees who saw great possibilities for the development of the audit by utilizing new technology in new ways. They were quite bored and fed up, and asked for a year off. The plan was to prove that they could do things differently with new technology and speed up the development process. The literature on OA within the public sector does not address this as a potential driving force of change. Workforce/workplace expectations is mentioned as an internal agility driver by Walter, however, a backwards search from there also leads to a kind of dead end, as the articles mentioned are all about the manufacturing industry (Lin, Chiu & Tseng, 2006; Zhang & Sharifi, 2007; Vinodh, Madhyasta & Praveen, 2012) (Walter, 2021, p. 357). However, the innovation lab's efforts can be considered an example of employee driven digital

development, which can be defined as “*ordinary employees driving the process of initiation, selection, experimentation, development and implementation of novel ideas to create new digital products, services or processes, or innovation processes that are supported by the use of digital tools*” (Opland et al, 2021, p. 4). The innovation lab initiative clearly did not have a top-down approach. In that way, it differs from the management style as the other identified internal driver.

Some external drivers of agility have been identified in the OAGN, with technology trends being the most prominent one. However, the internal agility drivers like management style and workforce/workplace expectations seems to have a strong influence on the organization’s motivation to change.

6.2. The innovation lab as an enabler of organizational agility

There is no universal set of agility enablers (Walter, 2021, p. 375). Enablers (or providers) are the methods, tools and practices and technology facilitating organizational agility. The innovation lab is an initiative which can be perceived as an enabler of organizational agility in the OAGN. There is no doubt that there exists several other enablers of agility in the OAGN. However, for this study’s purpose, the main focus has been the innovation lab as a phenomenon. The innovation lab in the OAGN was originally established as a development project, based on an initiative from a few employees, who saw possibilities in utilizing new technology. Observations show that the innovation lab is clearly inspired by some of the principles of agile system development from the agile manifesto. Top management’s support of the innovation lab initiative is clearly visible through this case study. Management shows technology optimism, courage, and a desire to continuously improve the organization. Although having one unit inspired by agile principles, supported by management does not make an agile organization. In agile organizations, employees at all levels are expected to contribute to the on-going sensing of the environment, by proactively obtaining information about the environment and interpreting, debating, reflecting on and analyzing potential changes in the organization (referred by Kirkpatrick et al, 2021, p. 72). In other words, sensing should not just the responsibility of the innovation lab.

One example illustrating that the organization has been slow to adopt suggestions or initiatives from the innovation lab, is the pilot project on AI in Lånekassen (Lånekassen, 2022) and the white paper on auditing machine learning algorithms. Interviews show that even if this is considered a very exciting assignment by many, no one has actually picked up this possibility and considered developing it any further. This implies a possibility of improving the responding part of the responsiveness capability. On the other hand, the number of participants at the hackathon event in November 2021 shows an increased interest among employees regarding experimenting and working interdisciplinary. The event revealed a ‘playfulness’ in the organization which was described as kind of surprising and beyond expectations. Some describe that changes that may seem small at first, are actually quite big steps, and that they observe a great willingness to improve in the organization. The innovation lab wants to be like a nice and friendly virus, spreading in the organization. This spread has come a long way already and will most definitely continue.

These examples show that the innovation lab *can* and *should* be viewed as an enabler that has contributed to improving the OAGN’s agile capabilities. However, some challenges were identified as well, which does not appear to have a natural place in the theoretical models presented earlier. These challenges can also be viewed as inhibitors when improving organizational agility, and will be discussed further in the next chapter.

6.3. Challenges versus agile capabilities

Figure 6 shows an illustration of possible connections between challenges and capabilities in the case. The challenges identified are organizational culture, communication and psychological safety, availability of new technology, developing the competence of the future, and autonomy versus alignment. In this section, the challenges identified in the OAGN will be discussed in relation to the agile capabilities suggested in theory to improve organizational agility: responsiveness, speed, flexibility, and competence.

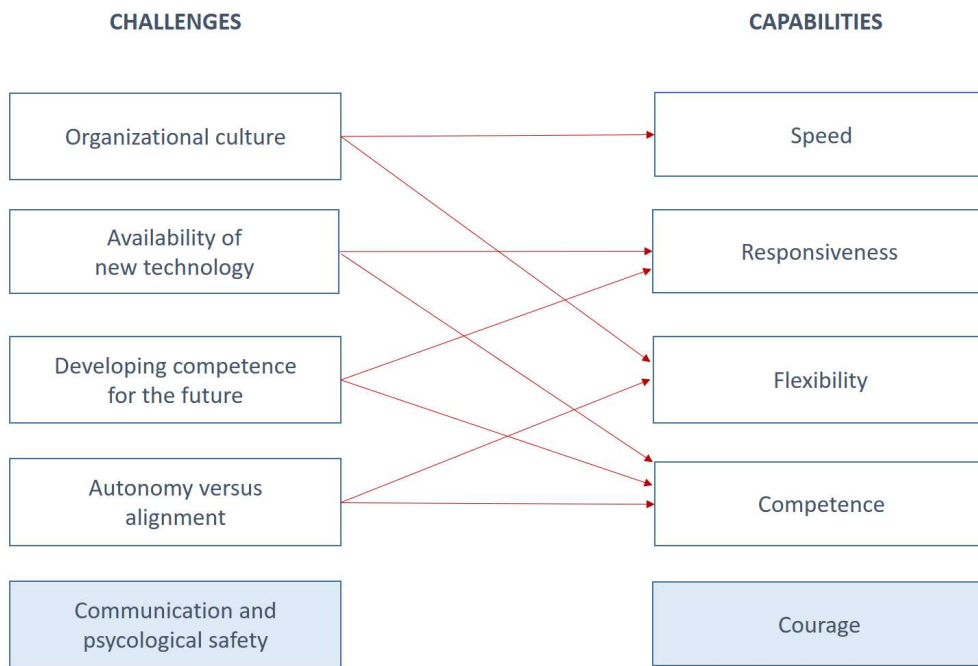


Figure 6: Possible connections between challenges and capabilities

One of the challenges (bottom left) and one of the capabilities (bottom right) in the model have a blue color. Communication and psychological safety was identified as a challenge in OAGN, although the link to agile capabilities from theory is not obvious. A new capability suggested is courage. Courage is capability identified in the innovation lab, as described in chapter 5.2.4. In this case, courage is not linked to any of the challenges. The courage in the innovation lab does not seem to be reduced by the identified challenges. The following discussion will be based on figure 6.

6.3.1. Organizational culture

Interviews identify the organizational culture in the OAGN as quite a big challenge, causing concerns for management. Expressions like “*that’s not how we do things around here*” or “*things take time in this organization*” are indicators that the organizational culture influences the ability to change. It has obviously not been easy, trying to create a common ground of values and understanding. The significance of organizational culture is established in former research.

“According to Seo and La Paz (2008), organizational culture that are anchored only on effective and efficient routines focusing on daily activities is likely to hinder

organizational agility while cultures encouraging creativity and innovation are bound to result in optimal organizational agility” (Jonathan & Watat, 2020, p. 2).

A recent case study of a municipality in Finland also confirms that special attention is needed to transform the operational culture when implementing agile approaches (Ylinen, 2021). This would require a clear vision, good leadership, and trust among the different stakeholders, so that individuals have a clear understanding of the objectives and have a feeling of support while working towards these objectives (Olsson et al, 2004, as referred by Ylinen, 2021, p. 255). As figure 8 illustrates, the challenge organizational culture can be seen as an inhibitor organizational agility, through affecting the improvement of the two capabilities, **flexibility** and **speed**. Flexibility includes both organization and organizational issues flexibility, and people flexibility. Whereas speed is naturally related to carrying out tasks and operations in the shortest possible time (Sharifi & Zhang, 1999).

6.3.2. Availability of new technology

The empirical findings show that the lack of availability of new technology has been a great challenge for the innovation lab. They were inspired by the development going on in the National Audit Office in the UK, and wanted to explore different tools and cloud solutions, which were not common in the OAGN at the time. The purpose was to learn and evaluate the possibilities of use in Norway. The **responsiveness** capability can be divided into the sub capabilities sensing and responding, and this situation can be seen as an example of **sensing** technological advancements (Overby et al, 2006). The real challenge however, was the **responding** part. Interviews show that information security has been a great concern in this regard. The OAGN has internal procedures for risk evaluation of new IT solutions to ensure information security. This slowed down the lab’s possibilities of innovation for a while. A topic appearing in ongoing research is the phenomenon called alignment-agility paradox, which may explain what is observed in this case. It refers to the unintended outcome of IT alignment resulting in organizational rigidity instead of organizational agility (Jonathan & Watat, 2020). Appropriate technology or sufficient technological capability is also considered a sub-capability of **competence** (Sharifi & Zhang, 1999), which provides the organization with productivity, efficiency, and effectiveness in achieving its goals. Figure 8 illustrates the links between the challenge availability of technology and the capabilities **responsiveness** and **competence**.

6.3.3. Developing competence for the future

Researchers agree that competence is considered an organizational agility capability. Sharifi and Zhang (1999) suggest many sub capabilities within competence, like knowledgeable, competent and empowered people, co-operation, and integration, to mention a few. Both interviews and observations show a wide variety of competences within the innovation lab, and the competence they currently have seems highly relevant to the tasks they perform. Learning by doing is something that the innovation lab has a big focus on. That is, they do not always know how to solve their tasks. It seems that is exactly the point, to continuously learn new technology and new skills, not knowing the exact outcome. The innovation lab also seems very conscious about the competence they will need going forward.

Observations show that the innovation lab is clearly inspired by the agile manifesto. However, interviews show that the innovation lab distance themselves from the field of informatics. The agile manifesto was developed by seventeen experienced system developers more than twenty years ago (Beck et al, 2001), and has been adopted by system developers all over the world since then. Higher education within system development has a strong focus on agile system development (University of Agder, 2022; Norwegian University of Science and Technology, 2022). It might be worth mentioning that it does not have to be a question of either waterfall or agile, but rather a yes to both. To illustrate this, Terrin's book on innovation lab excellence (2019) uses the terms fast and slow modes of development. Innovation labs typically work in fast mode, using agile approaches to build new software and getting new technology up and running as quickly as possible (Turrin, 2019, p. 87). Slow development is normally used for the organization's core systems. *"These are the databases and other underlying software that have powered the business for years and provide the systems of record"* (Turrin, 2019, p. 87). Turrin explains that core systems tend to be inflexible and that alterations to such core systems should be handled at a slow pace. *"[...] mistakes can cause service disruptions or data loss. Getting it wrong on core systems can be expensive. So core systems are treated with care, and changes are monitored with caution. This entails the use of 'waterfall' methodologies"* (Turrin, 2019, p. 87). Further, Turrin also highlights that the innovation lab may work *with* core systems, but they should avoid working *on* them, as they are so sensitive to change. What is identified in this case, may be a need for transfer of competence into the innovation lab from other units with competence on system development, as well as transfer of competence on new technology from the innovation lab to the rest of the organization. A first step would be to acknowledge

the fact that **competence** of both fast and slow mode of development is needed and not mutually exclusive. Facilitating co-operation and integration is necessary for this competence transfer to occur.

As for the competence in the rest of the organization, the situation seems a bit different. In addition to being able to capture and analyze more data for audit purposes, auditors need to understand and be able to audit the technology implemented in the organizations under audit. (Otia & Bracci, 2022). Given the high focus on innovation and digitalization in the public sector, one would expect a high focus on competence development in the OAGN related to new technology. The example of the pilot at Lånekassen (Lånekassen, 2022), which was finished in 2019, illustrates a challenge of responding (responsiveness capability) in the organization: the pilot and the collaboration with several other supreme audit institutions in other countries resulted in a white paper called '*Auditing machine learning algorithms*' (Office of the Auditor General, 2020a). A preliminary project in the OAGN called 'Financial audit of the future' reported in June 2021 that artificial intelligence is currently being used by several government agencies. (The Office of the Auditor General of Norway, 2021b). 100 government agencies answered the survey, and 21 of these already use AI. 8 agencies report the use of machine learning algorithms in their decision making processes (The Office of the Auditor General of Norway, 2021b). However, just recently, a new development project was suggested, to obtain an understanding of AI in government agencies. Findings in this case study indicate that the current competence level regarding artificial intelligence and machine learning are not according to what will be needed in the future. This understanding of the situation is also confirmed by recent research on several supreme audit institutions (Otia & Bracci, 2022). Some interviewees even point out that this competence will probably be crucial in many audits within all audit types going forward. Despite this, there is no impression that the OAGN have been in a hurry so far, to develop or attract more of this kind of competence.

Interviews show some concerns about recruitment and development of the necessary competence in the audit departments. Statements like "*the auditors are the ones actually doing the job*", and "*all the best heads cannot be in SUV*", and "*there must be a distribution of competence*" indicate that there are differences of opinion with regards to *where* in the organization this competence should be developed. This may also be an indication of lack of flexibility in the organization. Interviews show that competence is considered OAGN's biggest value. The strategic documents confirms this impression. The top management risk evaluation

from February 2022 shows that recruitment, and updating and developing competence, including sector competence is considered a business critical risk, demanding full attention from top management. The challenge of developing the competence for the future is in figure 6 linked to both **competence** and **responsiveness**.

6.3.4. Autonomy versus alignment

For some time now, the innovation lab has developed applications together with two central audit teams. These central teams perform procedures on behalf of many other auditors, in order to increase the efficiency in the audit process. This leads to more and more auditors relying on the solutions developed by the innovation lab. As the innovation lab is making applications that can turn out to be quite critical for the auditors, this could potentially pose a risk. Some wonder whether the innovation lab will be a permanent unit forever or if this is just a temporary thing. Questions arise about the management, operation and maintenance of the applications developed by the innovation lab. Some question if the innovation lab has the opportunity to just decide for themselves not to do the necessary maintenance of these applications if a more exciting innovation project comes along.

Until now, management has provided few guidelines for the innovation lab. They have had a high level of autonomy. The thought being that the resources can be used where they are most needed at all times. The challenge of autonomy versus alignment is in figure 8 connected to **flexibility**. Sharifi and Zhang (1999) mentions both organization and organization issues flexibility and people flexibility. The challenge could also be connected to **competence**. Empowered people, is suggested by Sharifi and Zhang (1999) as a sub capability of competence and have similarities to autonomy. Nijssen & Paauwe discuss work force scalability, which consists of workforce alignment (fit) and workforce fluidity (flexibility). Workforce alignment leads to a state-of-fit between the workforce and the strategic goals of the organization (Nijssen & Paauwe, 2006, p. 3320). The competence capability is the ability to achieve goals. If the innovation lab develops competence that is not really needed to achieve the goals of the organization, it would not contribute to improved organizational agility. Only if the prioritizations in the innovation lab is in line with the strategic goals of the OAGN, would the improved competence be expected to lead to improved organizational agility, and ultimately improved organizational performance.

6.3.5. Communication and psychological safety

Through interviews and observations, communication and psychological safety is identified as a challenge related to improving organizational agility in OAGN. First, the purpose of the innovation lab should have been explained more clearly to the rest of the organization. By communicating more clearly in the beginning, a lot of noise might have been avoided. During the innovation lab's first year, the expectations from the rest of the organization were quite low, because they did not actually understand what the lab would contribute to and how it might affect their work. After having the lab for several years, their contribution and results have become visible to the rest of the organization. However, interviews show that some audit teams who have approached the lab with their audit issues, have been rejected, because the issues are not innovative enough. As a result, there seems to still be some ambiguities about the role of the innovation lab. A second point to highlight is the communication style within the innovation lab, and challenges of communicating within the support and development department. Agile is not just a synonym for fast. Increased exchange of information between the units within the SUV department, including the innovation lab's initiatives would most likely reduce some of the tension. Communication challenges have not been identified explicitly in the identified research within organizational agility. However, in the book of innovation lab excellence, which has been an inspiration for the innovation lab, Terrin writes "*it's easier to show progress in mastering technology than mastering people and culture. It is the path of least resistance. [...] Your lab's number one priority, therefore, is to work with your staff and clients to get them ready and willing to accept change. [...] Interacting more with people and less with screens may not come naturally, but it's in the best interest of all involved*" (2019, p. 45). In this study, communication and psychological safety is considered a prerequisite for improving agile capabilities, and therefore communication challenges are considered potential inhibitors of improving all agile capabilities for the organization as a whole.

6.4. Organizational performance

Improvement of competitiveness is the general goal of organizational agility in the private sector. However, researchers argue that organizational agility is just as relevant for the public sector to help achieve their goals despite the absence of competitive market influence on the organization (Njissen and Paauwe, 2012; Jonathan & Watat, 2020). Previous research confirms organizational agility's positive impact on performance, but these research results are mostly related to the private sector and financial performance. In a study of organizational agility in

public sector, the performance perspective should also receive some attention. Recent research by Jonathan et al (2021) confirm a positive association between organizational agility and organizational performance in public sector through empirical testing. A positive effect of being agile in the public sector has also been empirically tested by Kirkpatrick et al, which identified five unit outcomes and four individual outcomes, described as key indicators of organizational performance (Kirkpatrick et al, 2021, p. 73). In this case study, the emphasis is on the organization as a whole and not on individual level. Referring to the broad definition of performance as the attainment of goals and objectives presented in chapter 2, the natural starting point to reflect on performance in the OAGN is their strategic goals and their annual reports describing the achievement of these goals.

In the OAGN, both interviews and document analysis identify that there is a strong focus on achieving the mission and satisfying the client. Both are suggested unit outcomes by Kirkpatrick et al (2021, p. 73). OAGN has a mandate and a purpose described in The Office of the Auditor General Act. Interviews show that this is perceived as the organization's social mission. A committee is currently working on an evaluation of this act and also an evaluation of the OAGN's fulfillment of the social mission. Interviews and strategic documents confirm that the OAGN welcomes an updated law to ensure that the organization perform according to the will of the Parliament. However, interviews also show that the management of the OAGN do not expect any significant changes in the legal mandate going forward. They state that the Parliament has always practiced an arms length's distance to the OAGN, and their impression is that the Parliament is satisfied with the way that the OAGN is currently fulfilling their social mission. In addition to the Committee of Scrutiny and Constitutional Affairs and the representatives of the Parliament (politicians), other stakeholders mentioned in OAGN's annual report of 2021 are the state administration, media, professional groups, and citizens. OAGN conducts a user survey among the state administration every year. Feedback is described as "generally good". There are small variations in the results compared to previous years, but there is an increase in the experienced usefulness of audits.

To ensure the fulfillment of the social mission, the organization has defined a vision and strategic goals. Goal 1 should ensure that the audit is current and relevant. The annual report presents some performance indicators used to measure achievement of goal 1, although not mentioning the expected level of achievement. For goal 2 high quality audit and goal 3 being an efficient organization, no such performance measurement or expected level of achievement

are identified. According to the annual report of 2021, OAGN performed financial audits on 233 ministries and government agencies, 13 performance audits and 7 compliance audits, in addition to controlling the ministries ownership in many state-owned enterprises (pp. 13-14). An expert panel of three professors from Norwegian universities have conducted an external quality evaluation of five selected performance audit reports in 2021 (p. 12). There is no presentation of results from other quality assessments beyond that. Concerning quality, an interesting reflection is the distinction between process and product. Audit reports are perceived as the output of the audit process, but this distinction is not obvious in the strategic documents. The mentioning of factors, like the number of employees, production level, business travels, travel costs and carbon footprint in the annual report, gives the impression that these are performance indicators related to the strategic goal of being an efficient organization. However, there is no comment on achievement. In general, the description of achievement of strategic goals in the annual reports are more about the measures taken, and the plans going forward, than the actual results achieved.

Jonathan et al (2021) confirmed the positive association between organizational agility and organizational performance in the public sector. Jonathan & Watat (2020) referred to previous research on the topic organizational performance, including Andersen, Boesen and Pedersen (2016), who suggested a conceptual space of performance in public organizations. Andersen et al's (2016) article may be of inspiration when deciding on how to measure performance. To monitor performance, the OAGN may benefit from identifying performance measures for all the three strategic goals, keeping in mind who the stakeholders are and how they perceive good performance. Further, to assess whether subjective or objective criteria are most suitable to evaluate performance, and distinguishing between process and product quality and decide on the unit of analysis (Andersen et al, 2016, p. 858).

6.5. Management's role

Organizations do not become agile by coincidence, it is dependent on management's conscious decision and intent of becoming agile (referred by Walter, 2021, p. 375). Walter explains the agile organization as a major task of strategic management (2021, p. 373). It is management's responsibility to know and monitor both external and internal drivers of organizational agility (Walter, 2021, p. 374). Management must establish a strategy to guide the way and initiate monitoring activities to check for alignment (Walter, 2021, p. 375). Management needs to

appropriately act on this insight by establishing/implementing measures that enable the organization to reduce or eliminate these drivers, so that they do not have a negative impact on performance.

Several of the interviewees mention that establishing the innovation lab back in 2017, was quite a courageous move by the OAGN management. The willingness to invest in something without a clear goal, instructions and without knowing the outcome, is considered somewhat unusual for this organization. Several interviews show that management expected challenges in the organization when establishing the innovation lab. Management describes a situation of change resistance in the organization, although some interviews also point to a reduction of this resistance over the years. The organizational culture is one of the challenges mentioned as a potential cause related to change resistance. Some of the interviewees describe the situation as exhausting. More than one manager even expresses the need to protect the resources involved in development activities due to the resistance in the organization. It is a management responsibility to respond to this challenge, which was both expected in advance and confirmed through this case study. Ylinen's case study suggests that organizational commitment is needed to solve the tensions arising from the collision between agile approaches and traditional public sector operational culture (2021, p. 267). Managing emerging tensions must not be left to individual employees, higher-level management is needed (Ylinen, 2021, p. 267).

A bureaucratic organization is a characteristic of the OAGN used by some interviewees. The bureaucratic ways of doing things are mentioned, by both management and others, as another challenge for the organization. Ylinen's explains that public organizations emphasize stability and pre-planning, and the agile mentality does not fit well to bureaucratic, inflexible, and hierarchical government structures (2021, p. 254). During the last years various activities has been initiated, targeted to ensure top management's insight and control of development projects in general. One example is the implementation of program and portfolio management. This was implemented almost simultaneously as the establishment of the innovation lab, which has a more autonomous approach to development activities. There are two forces going in different directions; one force pulls in the direction of innovation and autonomy, and the other force pulls in the direction of more decision making and control by management. Responding to this challenge, should not mean doing either one or the other, but rather acknowledge the need for both. Guidance is needed for the organization to use the right tools for the job. Autonomy is

necessary for some activities, and predictability is needed for other activities. (Kirkpatrick, 2021, p. 73).

Management have initiated an external evaluation of IT governance, which shows that there are some issues in the decision making process within the OAGN. Interviews also show that some question the innovation lab's authority to prioritize tasks. In agile organizations, decisions are made at the lowest level where the relevant expertise resides (Kirkpatrick et al, 2021, p. 72-73). However, providing direction by communicating the mission, encourage delegated decision-making, ensuring desired behaviors, and providing a climate of psychological safety is the priority of management (Edmondson, 1999; Hess, 2014; as referred by Kirkpatrick, 2021, p. 73). The concepts of organizational agility might be one way to motivate for change in a non-threatening way, without making it sound like a resource cut-down process. It could encourage change to ensure alignment with the environment, as opposed to messages about being ineffective or simply needing to work harder (Kirkpatrick, 2021, p. 78).

Responsiveness is the ability to identify changes, respond rapidly to changes either actively or proactively and recover from changes (Sharifi & Zhang, 1999, p. 17; referred by Walter, 2021, p. 360). In OAGN, responsiveness can be seen as both the ability to sense relevant topics for potential audits and respond to these, but also, the ability to sense technological trends and possibilities and make use of it to improve internal processes. The research of Otia & Bracci (2022) shows that most supreme audit institutions are currently doing process automation. Their study shows that there is a lack of cultural change which serves as a barrier to innovation. SAIs simply introduce technology into their old systems and audit tradition. The researchers believe that this can lead to the risk of SAIs not keeping up with the change and disruption happening in their external environment (Otia & Bracci, 2022, p. 270). Managers, who do not understand the impact of technological development, will not be able to make the right decisions for the future (Beckstrøm, 2017, p. 5).

6.6. Suggested conceptual model

Empirical findings from the OAGN case justifies the need for an adjusted conceptual model, inspired by both the conceptual model of organizational agility by Walter (2021) and Kirkpatrick et al (2021). While Walter's model is based on a comprehensive systematic

literature review, independent of sector, Kirkpatrick et al (2021) is an empirically tested model for organizational agility within the public sector specifically. Although it is discussed in the articles by both Walter (2021) and Kirkpatrick et al (2021), what is not obvious in their visual models are: feedback loops within the organization, the social mission fulfillment as an outcome for the public sector, and challenges or inhibitors of organizational agility. In figure 8, a new conceptual model is suggested, based on the empirical findings. The model is explained below.

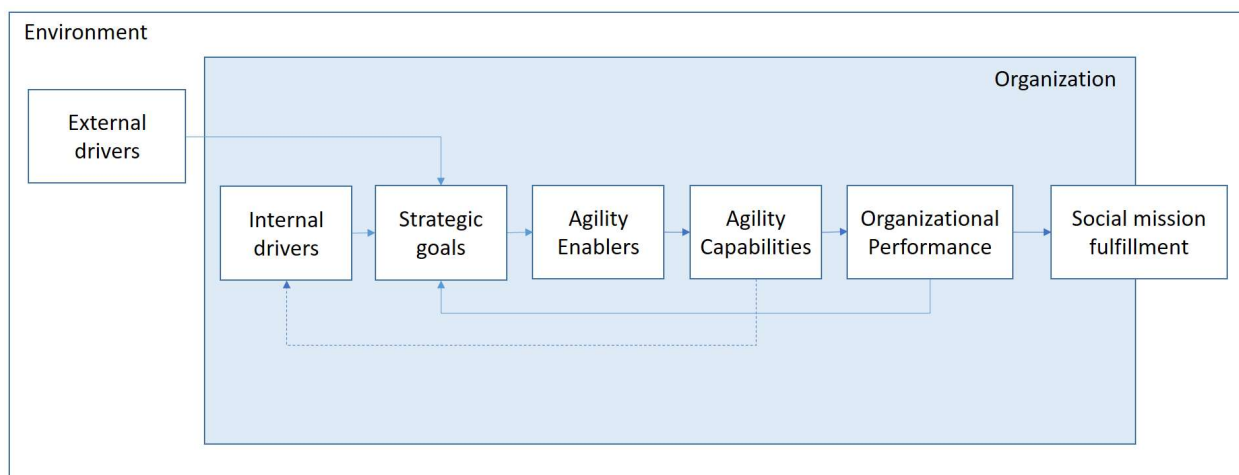


Figure 7: Suggested conceptual model from this case study

Management needs to monitor both external and internal drivers, and strategic goals are established by management to ensure the fulfillment of the social mission. This is illustrated by the arrow from external and internal drivers to the strategic goals. Management monitors and evaluates the organizational performance according to these strategic goals. This is visualized as a feedback loop from organizational performance to strategic goals. Further, management must continuously evaluate the appropriateness of the current enabling measures and the organization's capabilities. If necessary, management must either make changes to the strategic goals or take immediate action to adjust enablers, in order to reduce the negative effect of the drivers on organizational performance. A point of discussion in the model is whether the strategic goals may be considered an agility enabler. The argument for keeping the two elements separate is that the organization needs to know the overall direction, the strategic goals, prior to deciding on which enablers are necessary to achieve these goals. If new drivers are identified or if organizational performance is not satisfactory, it could *either* necessitate an adjustment in the strategic goals *or* the enablers, or both.

This case study has identified that the insight and competence developed in the organization (capability) as a result of the innovation lab's effort (enabler), has raised the workforce awareness of possibilities of utilizing new technology. This awareness can turn into expectations of change (internal driver). This logic is reflected by a feedback loop from capabilities to internal drivers.

The challenges identified in this case study may reflect that the established agility enablers do not provide the organization with the necessary level of agile capabilities to respond to the drivers. External and internal drivers may have a negative influence on the organizational performance. However, by measuring and monitoring the performance, management has a better basis for deciding which enablers to establish or adjust, in order to facilitate an improvement of the organization's agile capabilities. These capabilities increase the organization's ability to respond to drivers and hence, prevent the negative effect on organizational performance.

Many public organizations have requirements and expectations to deliver specialized services to the citizens and the society. This is viewed as the social mission fulfillment in the model. The placement of the social mission fulfillment is halfway in the organization and halfway in the surrounding environment. This illustrates the importance of sensing the surrounding environment's (external stakeholders) perception of the organization's fulfillment of their social mission, preventing it from being a self-assessment exercise.

7. Conclusions, implications, limitations and future research

This chapter presents the conclusions, as answers to the research questions from chapter 1. Next, the implications or contributions for practice, for the OAGN and for research are described. The end of the chapter reflects on this study's limitations and suggestions of future research.

7.1. Conclusions

This study was conducted to answer the following research question: *How can an innovation lab influence organizational agility in the public sector?* Multiple research sub-questions guided the study. The conclusions in this chapter are structured according to the sub-questions.

1. What can be drivers of organizational agility in a state agency?

This study identifies three external drivers of organizational agility: legal mandate and social mission, expectations from the surrounding environment, and technology trends. Two internal drivers were identified: management style and employees expectations.

2. How can an innovation lab influence organizational agility in a state agency?

Previous research suggested that flexibility, competence, responsiveness, and speed are agile capabilities. Of these capabilities, competence and flexibility are the most prominent in the innovation lab. However, this case study also introduced courage as an additional agile capability. Empirical findings show that the innovation lab contribute to enabling agile capabilities such as competence and courage. The hackathon is an event mentioned by many, which clearly has had an impact on the organization. The responsiveness capability consists of sensing changes in the environment and responding to these changes. The innovation lab seems to have influenced the OAGN's sensing ability the most. This is confirmed by the unanimity throughout the interviews regarding the importance of understanding and utilizing new technology. Nevertheless, action is needed to improve the responding ability, making the organization more able to act on new information and new possibilities. The white paper on auditing machine learning algorithms written in 2019 is an example. A satisfactory response ability might have resulted in both competence development measures and integration of the recommendations into the OAGN's audit methodology by now. However, at the moment, it seems unclear who is responsible for making it happen. The innovation lab's influence on the agile capability flexibility were not obvious. There is a high degree of flexibility within the innovation lab, but the findings in this case indicate a need to strengthen the flexibility capability in the rest of the organization. The empirical findings suggests that some of the challenges in the OAGN may indicate a need to strengthen the response part of the **responsiveness** capability, as well as a need to improve **flexibility** and **competence** for the organization as a whole.

3. What can be challenges of organizational agility in a state agency?

Five challenges were identified: organizational culture, communication and psychological safety, availability of new technology, the development of competence for the future, and autonomy versus alignment. These challenges can be seen as factors influencing the ability to improve agile capabilities of the organization as a whole. This study includes a model to illustrate the possible connection between the identified challenges and which agile capabilities they might influence (Figure 6).

4. How can organizational performance be measured in a state agency?

The OAGN has a strategic plan, which states the agency's vision and three strategic goals. The annual report describes the achievement of the three strategic goals. Interviews show that innovation lab is expected to contribute to the strategic goal 2 (high quality audit) and goal 3 (being an efficient organization). The descriptions of the achievement of these two goals in the annual reports the last two years are somewhat deficient. This may indicate lack of clarity on how performance actually could be measured or lack of information to support such measurement. The OAGN might benefit from clarifying its performance measurements.

The sub questions described above is of help to answer the main research question *How can an innovation lab influence organizational agility in the public sector?* The literature review showed limited research on organizational agility in the public sector. Organizational agility as a dynamic capability is often linked to private companies in volatile or highly unstable markets, where there is a need to act fast to improve a firm's competitive advantage. This logic is not relevant to the public sector and raises an obvious question: is organizational agility at all relevant for the public sector? This case study provides insight into organizational agility in a state agency. Exploring the establishment of an innovation lab as an agility enabler, provided an understanding of the influence on the organization's agile capabilities. The innovation lab has improved capabilities, like the sensing part of responsiveness and competence. Some challenges were also identified, and these can be seen as inhibitors of organizational agility. However, agility is not the destination, it is a journey that does not have an end (Mundra, 2018, p. 415). Defining what performance is for OAGN, defining expected levels of performance, and measuring and monitoring performance, would provide management with the necessary insight to decide if the agility enablers actually have the desired impact. Also, when evaluating fulfillment of their vision 'Auditing to benefit the society of tomorrow' and their social mission, the OAGN can benefit from focusing on what this means for the different stakeholder groups,

to ensure this is not merely a self-evaluation or an evaluation by the most obvious stakeholder, the Parliament.

The OAGN has a unique position in society and a very important constitutional role. There are no indications that their role will be significantly changed in the future, although the results of the ongoing evaluation of The Office of the Auditor General Act will be very interesting. As a supreme audit institution, the organization has the attention of the Parliament, the media, and the larger society. With it comes a responsibility of being a role model, when providing advice to other organizations in the public sector. Auditing can indeed benefit the society of tomorrow.

Although this is a single case study, the models suggested (Figure 3 and 7) illustrates how the concept of organizational agility can be of help for public organizations when responding to changes in the environment. The study confirms that organizational agility is indeed relevant for the public sector.

7.2. Implications and contributions

Practical knowledge is a valuable contribution from case studies (Flyvbjerg, 2006, p. 219). This case study contributes to practice by providing an overview of the different elements of organizational agility. Figure 3 shows the theoretical framework used to analyze the findings in this study. This could be of help to other organizations to understand the concept of organizational agility in a public sector setting. The study provides insight into an innovation lab, and its influence on the agile capabilities of the organization as a whole. An innovation lab is just one example of many possible enablers of organizational agility. Most of the research on organizational agility focus on businesses in the private sector operating in volatile environments, and with the goal of improving business performance to increase competitiveness and maximizing profit. Therefore, it would be easy to reject the theories of organizational agility as irrelevant for the public sector. However, this case study confirms that the concept of organizational agility can indeed be a good fit for the public sector. The models developed take into account the characteristics of organizations in the public sector.

For the OAGN, this study can help raise the awareness of the drivers and the challenges, or inhibitors, of organizational agility. Addressing the challenges may help reduce their negative influence on the agile capabilities flexibility, responsiveness and competence. Through

measuring performance, management can monitor if the enablers actually have the anticipated effect on the organization. Moreover, the OAGN should encourage dialogue with external stakeholders when evaluating the fulfillment of the agency's social mission. The suggested conceptual model of organizational agility (Figure 7) may also motivate for change, through its focus on alignment with the environment, as opposed to the need for change to become more efficient.

This study confirmed findings from previous research regarding the drivers and capabilities of organizational agility in the public sector, through exploring the OAGN and its innovation lab as an enabler. However, in addition to the capabilities mentioned in the organizational agility theory, courage was also identified as a capability. Empirical evidence show challenges in OAGN, which can also be viewed as inhibitors when trying to improve agile capabilities. The challenges identified are to some extent supported by theory, but the link between challenges and capabilities is not. Therefore, figure 6 helps visualize how the challenges may influence capabilities. Further, a conceptual model of organizational agility was developed (figure 7), with the aim of including the special characteristics of organizations in the public sector. The models can hopefully be of inspiration to other researchers interested in exploring the links between elements of organizational agility within the public sector.

7.3. Limitations and future research

Choosing case study as a research approach generated a lot of data, which is time consuming to collect and analyze. Time constraint is an obvious limitation, as this study has been conducted as part of a master thesis. A long-term study with more observations and more interviews might have provided even more perspectives and elaborated on the findings. Some may argue that findings from a single case study cannot be generalized, and therefore cannot contribute to scientific development. According to Flyvbjerg, this is a common misunderstanding about case studies (2006, p. 219). The findings in this case study proposes an extension of the theory on organizational agility by adding elements suitable for the public sector. The conceptual model suggested in this master thesis should be further tested and challenged through other case studies.

Another topic worthy of more attention would be organizational performance in the public sector. This study did not identify an obvious link from the innovation lab as an enabler of

organizational agility, to achieving strategic goals and fulfilling the agency's social mission. As interviews did not provide enough empirical evidence related to performance, an analysis of selected strategic documents have formed the base for reflections related to performance in this case. However, to elaborate on this topic, neither interviews, observations nor document analysis would be sufficient. By extracting and analyzing data from other sources, like the resource management system, the portfolio system and the audit support system, performance development could be studied over a longer period. Empirical testing of performance and fulfillment of social mission on a larger scale and through other research methods would provide valuable insight to the effects of organizational agility in the public sector.

Further, this study has focused on only one enabler, the innovation lab. Other initiatives and measures in the organization could also be of interest, including the alignment of enablers and their impact on organizational agility. This case study identified challenges that may also be relevant for other public organizations, like the collaboration between the IT unit and the innovation lab. A topic for further research would be to explore how the IT unit and an innovation lab can continue to coexist and collaborate, and minimize the tension in order to improve organizational agility and organizational performance. The alignment-agility paradox as mentioned by Jonathan & Watat (2020) and may be of interest in this matter.

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Appendix 1 Systematic Literature Review

Literature reviews have been performed by several other authors on the topic organizational agility in general. However, few literature reviews have been conducted for the public sector. The main arguments for conducting a literature review for the public sector in particular are the difference in the surrounding environment and competitive situation. Within the private sector, the main goal of organizational agility is to increase competitiveness and improve financial performance as a result. Also, there has been a high focus on the manufacturing industry in research during the years. The literature review is inspired by Kitchenham et al (2004) and Webster and Watson (2002). The search was limited to the Scopus database because it provides a comprehensive overview of research relevant for information systems field. Without any prior knowledge of the topic, some searches in Scopus were tested initially, with the purpose of familiarizing with potential relevant research. Different combinations of the words “innovation”, “innovation lab*” and “public” or “government”. The combination of “innovation”, “public” or “government” returned 68167 articles. A combined search of “innovation lab*”, “public” and “government” resulted in 32105 articles. Through these initial searches, the research question also became more to the point; to explore the innovation lab as an enabler of organizational agility. As a result of that, the key words used in the search were delimited to organizational agility. A search combining “organi?ational agility” and “enterprise agility” returned 721 articles. Both terms appear in previous research and are being used interchangeably. A search including “public” and “governance” reduced the results significantly down to 52. Table 4 shows the search words used in Scopus and Table 5 shows the search string.

Table A1-1: Search words in Scopus

Main Topic	Variations of search words
Organizational agility	"organi?ational agility" "enterprise agility"
Public sector	"government" "public sector"

Table A1-2: Search string in Scopus

Used search string in Scopus
TITLE-ABS-KEY (("organi?ational agility" OR "enterprise agility") AND ("public" OR "government"))

Figure 8 shows the process of the systematic literature review. As recommended by Kitchenam (2004), a review protocol was developed prior to conducting the actual search, showing the research questions, key words used during the search and the search string. The review protocol was developed in Excel, inspired by a video from Danielsen (2020). An extraction of selected metadata from all articles in the search result from Scopus were imported into the search protocol. Each step of the review process was documented, making the process of evaluating transparent. Uncertainty about the inclusion/exclusion of articles were discussed with experienced researchers in the information systems research field.

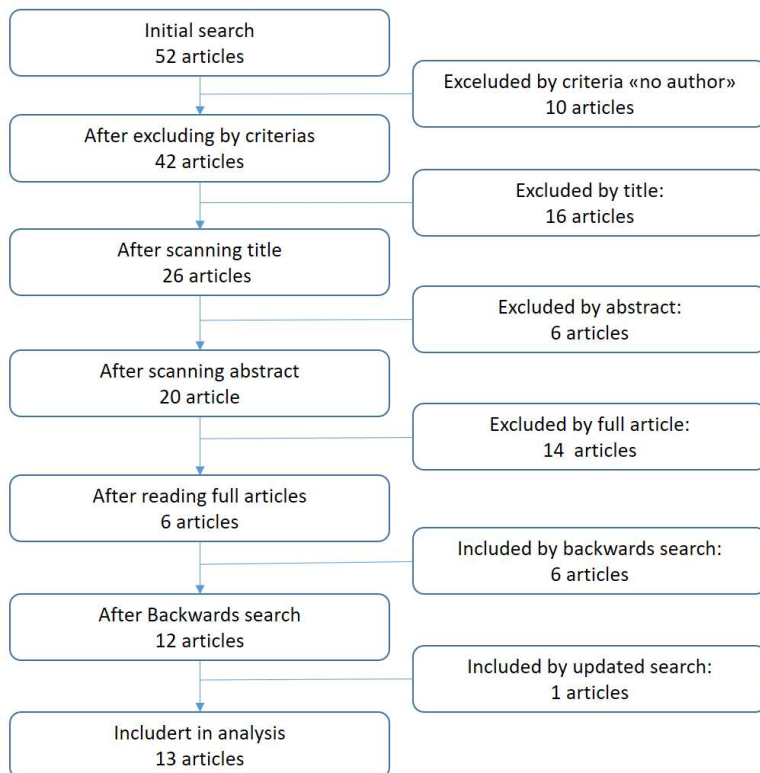


Figure A1-1: Process literature review on organizational agility in public sector

Due to the researchers limited experience of conducting systematic literature review, different including and excluding criteria were tried initially, like articles no more than five years old, the most acknowledged journals and conferences for the information systems research field. However, this turned out to be quite challenging, as it would result in just a few articles to analyze. To avoid a too narrow review, the only excluding criteria was articles within the document type “cr” (no author). This excluded 10 articles from the initial search.

42 articles were scanned manually by title. This step was a qualitative review of the title and did not just include articles which used the exact words “organizational agility” or “enterprise agility”. A rule of thumb throughout the entire qualitative evaluation was to rather include too many articles than to exclude them too fast. 16 articles were excluded based on title. The next step was to scan the abstract of 26 articles. Another 6 articles were excluded in this step. 20 articles were read in full text for a thorough evaluation. The reasons for excluding the articles during reading of the abstract and/or the full articles were; duplicate articles (Chen et al, 2014; and Chen et al, 2011 was confirmed duplicates by the library at the University of Agder), or that research was not actually about the public sector (Matthiae and Richter, 2018; Panda and Rath, 2021; Gison, 2018) or that the topic or focus of the article was very narrow like IT support, technical debt or a specific information system (Safitiri et al, 2020; Soumia et al, 2011; Brenner, 2019). By the end of the process only 6 of the articles were considered relevant (Kirkpatrick et al., 2021; Barroca et al., 2019; Carvalho & Sousa, 2014; Chen et al., 2011; Nouri & Mousavi, 2020; Jonathan & Watat, 2020).

Because of the low number of articles related to OA in the public sector specifically, the backward search was conducted to include articles from the private sector to highlight specific topics within organizational agility. Examples of this approach are; drivers or change factors (Van Oosterhout et al., 2006), different types or dimensions (Sambamurthy et al., 2003), enablers (Overby et al., 2006), characteristics (Njissen & Paauwe, 2012), capabilities (Teece et al, 2016), and organizational performance (Tallon & Pinsonneault, 2011). Some of these articles were referred to by several authors.

During initial search to familiarize with the topic, a conceptual model for organizational agility, in a recent systematic literature review was identified (Walter, 2021). Although not related to the public sector, this article turned out to be very important for clarifying both the definitions and concepts of organizational agility. The article was later found in Scopus as well. Walter’s

article was published in Management Review Quarterly in 2021. It was based on an analysis of 75 articles, published between 1991 and 2018, in peer-reviewed academic journals rated from A+ to C, according to VHB-Jourqual rating. The review provided an overview of previous literature reviews (Gunasekaran, 1999; Yusuf et al., 1999; Sanchez & Nagi, 2001; and Potdar et al., 2017) (Walter, 2021).

“The OA literature, until today, still seems disconnected with regard to the identified categories of OA: agility drivers, agility enablers, agility dimensions, and agility categories. The state of the art shows a great need to place OA in the organizational framework and the business environment.” (Walter, 2021, p. 368).

Several of the articles referred to in the research within the public sector, were also referred to in Walter (2021). The complete overview of all the articles selected for further analysis are shown in table A1-3 below.

Table A1-3: Selected articles for analysis

Sector	#	Authors	Title	Year	Source title
Public sector	1	Kirkpatrick S.A., Miller S.C., Terragnoli A., Sprenger A.	Development of an organizational agility assessment for government and nonprofit organizations	2021	Organization Development Journal
	2	Barroca L., Sharp H., Dingsøyr T., Gregory P., Taylor K., AlQaisi R.	Enterprise agility: A balancing act - A local government case study	2019	Lecture Notes in Business Information Processing
	3	Carvalho J., Sousa R.D.	Enterprise architecture as enabler of organizational agility - A municipality case study	2014	20th Americas Conference on Information Systems, AMCIS 2014
	4	Chen J., Wang D., Pan S.L.	Understanding organizational agility development for government- A process model of resource configuration	2011	PACIS 2011 - 15th Pacific Asia Conference on Information Systems: Quality Research in Pacific
	5	Nouri B.A., Mousavi M.M.	Effect of cooperative management on organizational agility with the mediating role of employee empowerment in public transportation sector	2020	Cuadernos de Gestion
	6	Jonathan G.M., Watat J.K.	Organisational agility and IT alignment in public organisations	2020	26th Americas Conference on Information Systems, AMCIS 2020
Private sector	7	Overby, Bharadwaj & Sambamurthy	Enterprise agility and the enabling role of information technology	2006	European Journal of Information Systems
	8	Teece, Peteraf, Leih	Dynamic capabilities and organizational agility: risk, uncertainty and strategy in the innovation economy	2016	California Management Review
	9	Tallon & Pinsonneault	Competing Perspectives on the Link Between Strategic Information Technology Alignment and Organizational Agility	2011	MIS Quarterly
	10	Sambamurthy, Bharadwaj & Grover	Shaping Agility through Digital Options: Reconceptualizing the Role of Information Technology in Contemporary Firms	2003	MIS Quarterly
	11	Van Oosterhout, Waarts & Hillegersberg	Change factors requiring agility and implications for IT	2006	European Journal of Information Systems
	12	Nijssen, M., Paauwe, J.	HRM in turbulent times: how to achieve organizational agility	2012	The International Journal of Human Resource Management, 23:16
	13	Walter, A-T.	Organizational agility: ill-defined and somewhat confusing? A systematic literature review and conceptualization	2021	Management Review Quarterly

A concept matrix was developed to provide an overview of relevant topics arising through the literature review process. Such a matrix is recommended by Webster and Watson (2002), as

opposed to having an author centric approach when describing the topic of interest. The concepts were identified in the reading process and the author's own use of terms in the articles was the basis for developing the concepts. In situations where the terms appeared to have similar meanings, these were combined and treated as one concept (one column). Examples are "antecedents" used by Kirkpatrick (2021), "change factors" in Van Oosterhout et al (2006), and "drivers" in Walter (2021). Another example is "Organizational performance" by both Jonathan and Watat (2020) and Tallon and Pinnsonault (2011) and the term "outcome" used by Kirkpatrick et al (2021). Although the concept building process is a qualitative evaluation and interpretation of the terms, it was inspired by the conceptual models by both Kirkpatrick et al (2021) and Walter (2021). Results are presented in chapter 2. The concept matrix also includes an overview of theoretical background for each article, as described by the authors themselves. An observation is the significance of the theory of dynamic capabilities within organizational agility research.

Methodological limitations

The selection of Scopus as the only database is a limitation for the systematic literature review. Including other databases might have identified other articles in other research fields. The key words used in the search could have included more synonyms and could have identified articles with related topics, not explicitly defined as organizational agility or enterprise agility. A more experienced researcher might have evaluated the relevance and the quality of the articles differently. This is, though, the nature of qualitative evaluations: researchers might come to different results based on their knowledge and experience. To ensure transparency through the systematic literature review, the whole process is described in detail in this appendix. The literature review of Walter (2021) was discovered after the completion of the systematic literature review of organizational agility within the public sector. This was a recently published article, not appearing in the Scopus search because it was not about the public sector specifically. There are two arguments for including it in the analysis: first, it contained an overview of prior literature reviews on organizational agility, concluding with a high focus on the private sector and especially the manufacturing industry. Second, it had an intuitive conceptual model, based on recognized research, which provided clarifications of the elements of organizational agility and their interdependencies, which turned out to be of importance in this study.

Appendix 2 Research method

Research design

A case study focuses on one instance of the “thing” that is to be investigated: an organization, a department, an information system, a discussion forum, a systems developer, a development project, a decision and so on. The aim is to obtain a rich, detailed insight into the “life” of that case and its complex relationships and processes (Oates, 2006, p. 35). The establishment of innovation labs is a phenomenon appearing in supreme audit institutions around the world during the last five years (Otia & Bracci, 2022, p. 261). This master thesis will attempt to contribute to the understanding of this phenomenon, by investigating one particular innovation lab in the OAGN. The choice of a single-case study as the research strategy provides the possibility to view the phenomenon from several different angles within one agency. The OAGN has had an innovation lab for several years. A case study is therefore expected to provide a unique insight into the motivation for establishing the innovation lab, and how having an innovation lab has affected the organization. Organizational agility is chosen as the theoretical framework. This leads to the following research question:

RQ: How can an innovation lab influence organizational agility in the public sector?

Interviews will provide data to understand both the external and internal drivers of organizational agility in OAGN, and also the enablers, capabilities and challenges. Observations will supplement data obtained from interviews by adding understanding of communication, atmosphere, and attitude. Strategic documents will be collected to supplement information provided through interviews and to provide insight into the performance measurement in the OAGN. Walsham recommends such data source triangulation for interpretive research (2006. p. 323).

Preparations

An application for data collection was sent to the Norwegian centre for research data on the 15th of December 2021. (The centre changed its name to the Norwegian Agency for Shared Services in Education and Research 1st of January 2022). Approval was obtained on 14th of January 2022, prior to the data collection. The OAGN’s own systems were used during the preparations and the collection phase to ensure the interviewees' privacy. This allowed the

researcher to correspond with the interviewees through email and chat in Teams for practical reasons, and the possibility to generate Teams meeting invitations without compromising the privacy of the participants. This was agreed with the OAGN in advance and was described in the application to the NSD. The recruitment of interviewees was initially done through email, describing the topic and purpose of the study, attaching an information letter to explain the treatment of personal data. The information letter was based on the recommended information letter template from the NSD and is included as Appendix 3.

Interview guides, inspired by the theory presented in chapter 2, were developed as preparations for conducting the interviews. The interview guides had slightly different focus, depending on the level and department affiliation of the interviewees. For the innovation lab employees, the researcher emphasized topics like the antecedents of the lab, the philosophy and work methods, their background and competence, challenges, and success factors. For interviews of top management, the focus was on the social mission and the strategic goals of the OAGN, and also top management's perception of what impact the innovation lab has had on the organization as a whole. To cover the perspective of the audit departments, interviewees were recruited from both project and middle management level. The topic of focus in these interviews were mainly their experience from collaborating with the innovation lab. None of the interviewees received the full interview guide in advance, only a high-level overview of topics. An example of an interview guide is included in Appendix 4.

To prepare for the observation of meetings, the innovation lab was first informed of the research project by email, with an information letter attached. The information letter related to the observation was also based on the recommended template from NSD. Based on agreement with the innovation lab manager, the researcher participated in five of the innovation lab's stand-up meetings on Monday mornings over a period of six weeks. During the first meeting, the researcher asked for suggestions of other meetings and projects suitable to include in the study. As a result, the researcher participated in three project related meetings during the same period, based on invitation from the innovation lab employees.

Data collection: interviews and observations

All interviews were conducted, recorded and transcribed using Teams. There are advantages and disadvantages of performing in-depth interviews on video. The OAGN has offices all over Norway. Also, home office is still quite common among the employees, and therefore most

meetings are currently conducted using Teams. The Teams solution was implemented during the pandemic, and most employees are now familiar and comfortable with conducting meetings through Teams. All interviewees were asked in advance about the possibility of recording and automatic transcription in Teams. The question was repeated in the beginning of each interview, providing the participant the opportunity to withdraw from the interview if desirable. None of the participants had any concerns about recording and transcribing in Teams. Below in table A2-1 is a summary of all the interviews conducted in the OAGN.

Table A2-1: Overview of interviews and duration

#	Date	Participant	Duration
A	10.02.2022	Auditor/project member	00:39:29
B	14.02.2022	Middle management	01:00:26
C	22.02.2022	Top management	00:54:04
D	28.02.2022	Innovation lab	01:10:42
E	01.03.2022	Innovation lab	01:07:16
F	02.03.2022	Top Management	00:41:50
G	03.03.2022	Staff/management	01:18:58
H	04.03.2022	Top Management	00:47:29
I	07.03.2022	Auditor/project member	01:32:12
J	06.04.2022	Middle management	00:57:41

To ensure privacy, none of the interviewees are mentioned by name, experience, background, or department affiliation. The OAGN is a relatively small organization, and it would be too easy to identify individuals if any such information were provided. Three of the interviewees (A, C and J) were selected by the researcher based on knowledge of their role and responsibility in the organization. Some initial inquiries were done to understand their collaboration with the

innovation lab, and to adjust the interview guide accordingly. All interviewees were asked to suggest other candidates for an interview. The other seven interviews were selected based on their suggestions.

Conversations with the innovation lab were conducted initially to identify potential projects and meetings suitable for observation. The researcher participated as an observer in nine meetings in total. Please refer to Table A2-2 below for an overview of meetings observed.

Table A2-2: Overview of observations

Date	Activity observed	Participants
07.02.2022	Morning meeting	○ Innovation lab
14.02.2022	Morning meeting	○ Innovation lab
17.02.2022	Innovation brunch	○ Hackathon teams ○ Innovation lab ○ OAGN employees
21.02.2022	Morning meeting	○ Innovation lab
28.02.2022	Morning meeting	○ Innovation lab
14.03.2022	Morning meeting	○ Innovation lab
14.03.2022	Project meeting	○ Innovation lab ○ Project members ○ IT unit
15.03.2022	Project meeting	○ Innovation lab ○ Project members ○ IT unit
01.04.2022	Method lunch	○ Innovation lab ○ Project members ○ Audit departments

Five of these meetings were stand-up meetings for the innovation lab. Two project meetings related to an ongoing development project were observed, based on the innovation lab's recommendation. No recordings were done from these meetings. Documentation exists in the form of the researchers' own notes. One of the events observed was an innovation brunch, where some of the teams from Hackathon 2021 pitched their idea to the rest of the organization.

Another was a method lunch, presenting the results and methods used for the project goal achievement in the Police. Both of these meetings were recorded in Teams, but this was initiated by the project themselves, not the researcher. The recordings are available to all employees in the OAGN.

Data collection: documentation

Documentation was obtained to confirm information provided during interviews and to gain insight into the strategic goals, social mission and the measurement of performance in the OAGN. An overview of the documents collected is presented in Table A2-3 below. The table shows document title, a short explanation of the document, the source, and why the document is of interest.

Table A2-3: Overview of documents collected

Document title	What?	Reference	Why?
“Auditing to benefit the society of tomorrow”, Strategic plan 2018-2024, The Office of the Auditor General of Norway	The overall strategic plan for the OAGN for the period 2018-2024	Office of the Auditor General of Norway, 2018	To understand management’s future prospects and expectations
Mandat for moderniserings-programmet	Mandate of the modernization program	Office of the Auditor General of Norway, 2017	To understand the motivation for establishing the innovation lab
Årsrapport 2021, Dokument 2 (2021-2022)	The OAGN’s annual report 2021	Office of the Auditor General of Norway, 2022b	To analyze organizational performance
Årsrapport 2020, Dokument 2 (2020-2021)	The OAGN’s annual report 2020	Office of the Auditor General of Norway, 2021a	To analyze organizational performance
Virksomhetsplan 2022-2023	Organizational plan 2022-2023	Office of the Auditor General of Norway, 2022e	To understand the prospects and expectations for the coming year
Referat TLGs risikovurdering	Top management’s risk evaluation	Office of the Auditor General of Norway, 2022d	To understand the priorities for the coming year

Document title	What?	Reference	Why?
Hackathon 2021	Practical information to the participants of Hackathon 2021	Office of the Auditor General of Norway, 2021c	To understand the goal of the hackathon event and gain insight into the communication about event
Imponerende innsats på Hackathon	News message about Hackathon on the OAGN intranet	Office of the Auditor General of Norway, 2021d	To understand the communication about the hackathon event
Presentasjoner fra hack4reven 2021	Presentations by six of the teams on Hackathon	Office of the Auditor General of Norway, 2022g	Observe the outcome of the Hackathon 2021
Årsrapport 2019 Statens lånekasse for utdanning	Annual report from Lånekassen 2019	Lånekassen, 2020	To understand and confirm the described use of AI in Lånekassen
Maskinlæring metodelunsj	Presentation by the innovation lab about machine learning, artificial intelligence, auditing algorithms	Office of the Auditor General of Norway, 2020b	To understand and confirm the described pilot project at Lånekassen
Maskinlæring, automatisering og algoritmer - det er nå det skjer	Article about auditing algorithms, published in the Norwegian journal <i>Kommunerevisoren</i> in 2017.	Beckstrøm, 2017	To understand the motivation for establishing the innovation lab, and the external communication about the innovation lab's work
Auditing machine learning algorithms	White paper on the topic of auditing algorithms written by the SAI of Finland, the Netherlands, Norway and the United Kingdom	Office of the Auditor General of Norway, 2020a	To confirm the outcome of the pilot project at Lånekassen
Boken om datasenteret	Description of the Data center (innovation lab)	Office of the Auditor General of Norway, 2020c	To understand the working methods of the innovation lab and their history
Sterkere internasjonalt samarbeid innen data science	News message about a recent international meeting	Office of the Auditor General of Norway, 2022f	To gain insight into the international collaboration on AI and data science

Appendix 3 Information letter to interviewees

Would you like to participate in the research project

“Innovation labs - a tool for organizational agility in the public sector”?

This is a request for you to participate in a research project where the goal is to explore if the establishment of an innovation lab contributes to more organizational agility in the public sector. The research is conducted as part of a master thesis at the Department of Information Systems at the University of Agder. In this letter, we explain the goals of the project and what your participation will entail.

Purpose

The research will be a part of Sylvi Nerskogen’s master thesis. The goal of the project is to explore if the establishment of innovation labs contribute to organizational agility in the public sector. The research will be conducted as a case study of The Office of the Auditor General of Norway, which has had an innovation lab since 2018. The plan is to perform 10-12 interviews of employees to understand why the innovation lab was established, and what results have come out of having an innovation lab for several years. The student will also participate as an observer in the innovation lab’s meetings. The purpose of this, is to understand how the innovation lab works, what they deliver and how they collaborate with the rest of the organization.

The research question is:

«How innovation labs contribute to organizational agility in public sector organizations?»

Research sub questions:

- *«What are the drivers for establishing innovation labs in state agencies?»*
- *«What are the results of having innovation labs in state agencies?»*

The two supervisors professor Øystein Sæbø and PhD Frank Danielsen will to some extent have access to the data. Data collected will be used in the research as described above, but the findings may also be used in future research.

Who is responsible for the research project?

Universitetet of Agder is responsible for the research project.

Why are you receiving this request to participate?

It is expected that the understanding of the research question be best obtained through conducting interviews with employees in the organization, and through meeting observations. By interviewing top management, we will gain more understanding of the drivers of establishing the innovation lab, about the expectations of results, and also about the achieved results. Interviews with middle management and other employees will provide information about perceived results of the initiatives by the innovation lab. Interviews with the innovation lab will provide valuable insight into how this unit is working and the employees' experience. The plan is to conduct 2-3 top managers, 2-3 middle managers, 3-4 auditors and 2 employees from the innovation lab.

What participation will mean to you?

The interviews will be conducted by using a semi-structured interview guide. If the interview is conducted physically, an approved recording device will be used. If the interview is conducted through Teams, the recording functionality in Teams will be used. The interview will be transcribed, before further analysis. As a interview object, you will receive the transcribed material for reading and approval. No sensitive personal data will be gathered. If any such information is provided during interview, it will be treated confidentially. After analysis and the master thesis is approved, all data will be anonymized. Some documentation describing the innovation lab will also be collected for analysis.

Participating is voluntary

To participate in this project is voluntary. If you choose to participate, you can withdraw the consent at any time without providing a reason. All your personal information will be deleted. If you do not want to participate or if you choose to withdraw later, it will not have any negative consequences for you.

Your privacy - storing and using your information

We will only use the information about you for the purpose mentioned in thesis. We will treat the information confidential and according to privacy regulations.

- If using Teams for video recording, it will only be stored in the OAGN's own systems
- Otherwise, data collected through interviews and document analysis will only be available to the student and the student's supervisors
- Besides video recordings, data will be stored in the Universitetet of Agder's systems. All the University of Agder's rules for storing research data will be followed.

The name of the person collecting, processing, storing the data, like for example the transcript provider: Sylvi Nerskogen, master student at the Universitetet of Agder.

What happens to the information about you at the end of the research project?

Personal information will be deleted and all the data will be anonymized when the project ends or the master thesis is approved, and at the latest 1st of February 2023. Audio and video recordings will be deleted when the transcription is completed.

Your rights

As long as you can be identified in the data material, you have the right to:

- insight into the information we are processing about you, and to obtain a copy of this information
- have incorrect or misleading information about you corrected
- have information about you deleted
- send complaint about the processing of your personal information to the Norwegian Data Protection Authority

What gives us the right to process personal information about you?

We process information about you based on your consent.

Upon request from the University of Agder, the Norwegian centre for research data (NSD) has assessed that the processing of personal information in this project is in accordance with privacy regulations.

Where can I find more information?

If you have any questions about this study, or wish to know more about it, or wish to exercise your rights, please contact:

- Universitetet of Agder, PhD Frank Danielsen, email: frank.danielsen@uia.no, phone: +47 38 14 20 67
- Universitetet of Agder, Professor Øystein Sæbø, email: oystein.sabo@uia.no, phone: +47 38 14 16 26
- Universitetet i Agder's Privacy Representative Johanne Warberg Lavold, email: personvernombud@uia.no, phone: +47 38 14 13 28
- Contact information to the master student at the Universitetet of Agder, Sylvi Nerskogen, email: sylvi.nerskogen@uia.no, phone: +47 40 90 51 91

If you have any questions regarding NSD's assessment of this project, please contact:

- NSD – Norwegian centre for research data at email: personvertjenester@nsd.no or by phone: +47 53 21 15 00.

Yours faithfully

Frank Danielsen

Sylvi Nerskogen

Supervisor

Master Student

Appendix 4 Example interview guide

Introduction:

Could you start by telling me a about your role in the organization and how long you have had this role?

Did you have any other roles within the OAGN? If so, which ones?

Could you please tell me a bit about your background (before starting in the OAGN)?

Could you please tell me, in your own words, about the OAGN's mandate or social mission?

Topic: Drivers

In light of the appointed committee for evaluating the Office of the Auditor General Act: do you envision any changes in OAGN's legal mandate or social mission in the future? If so, which changes might that be?

Do you envision any changes in expectations of how the OAGN fulfills its social mission in the future? If so, from whom?

Topic: Capabilities

How can the OAGN capture the expectations and changes in the environment that may have an impact on the fulfillment of the social mission?

What do you think will be required of the OAGN to meet these changes? (Or how can the OAGN position itself in the best possible way for what is coming?)

What do you think will be the biggest challenge?

Topic: The innovation lab

Can you please tell me about your knowledge of the innovation lab and what they do?

For what specific tasks or projects did your department collaborate with the innovation lab?

What was the biggest motivation for establishing an innovation lab? (Or what was the biggest motivation to keep having an innovation lab?)

What makes the innovation lab unique?

Topic: Outcome

What is different now, compared to before the establishment of the innovation lab?

How does having an innovation lab affect the organization?

Other noticeable changes or ripple effects in the organization after establishing the innovation lab?

Any unexpected effects of having an innovation lab?

Topic: Challenges

As a top manager, do you see any challenges of having an innovation lab?

Topic: Successfactors/ advice to others

In your opinion, what prerequisites should be in place to succeed with an innovation lab?

Other matters (closing):

Anything you wish to add?

Any other questions I should have asked?

Tips of others I should interview?

Tips of strategic documents I should read?