The Case of Norway and Digital Transformation over the Years

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Abstract Norway is generally characterized by a pervasive presence of digital services. It is currently undergoing a digital transformation across different domains, from daily life to public and private enterprises. In this introductory chapter, we first unpack the main drivers of digital transformation in Norway so far and its enabling conditions based on three illustrative examples: the development of Altinn, a digital platform supporting digital communication between citizens and public and private organizations; the evolution of BankID, Norway's electronic identification system; and the current push for open data sharing leveraging experiences in the energy industry. We identify key common enabling conditions: a trust-based cooperation across social partners and across public and private sectors, the public sector's driving role, cross-organization consolidations and consortia, and application-oriented initiatives. In the second part of the chapter, we summarize the content of the subsequent chapters in this book shedding light on different facets of digital transformation in Norway.

1 Introduction

Norway regularly tops digitalization rankings in Europe together with the other Nordic countries [1]. While reality is obviously more convoluted than what official rankings tell, among the reasons why Norway scores so high are the facts that Norwegians are considered to be early adopters of digital technologies and have

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very high digital skills and that the Internet and mobile infrastructure provide very good coverage and connectivity [2]. There are indeed several examples that corroborate the results of these rankings. If we were to take a picture of everyday life in Norway, we would observe that almost every citizen in Norway adopts online banking; pays their bill online; interacts with public agencies through digital channels such as platforms, chatbots, and video-based meetings; performs their tax return electronically; and exchanges money seamlessly via mobile payment apps. A look at the private sector and the industry would provide a similar picture: companies invest significantly in digital platforms for collaboration, virtualization, and data sharing and analysis. While Norway seems to struggle to improve its performance in terms of digital public service delivery [3], we observe that, for example, the healthcare sector has been an early attractor of significant investments toward a shared digital infrastructure (including data exchange standards[1] and platforms) to share electronic patient records. This has sometimes raised heated discussions in the media about whether some of the larger projects meet actual user needs [5].

From this perspective, the Norwegian road to achieving digitalization has so far been uneven but, overall, quite successful. As we observe in the previous chapter, digitalization implies the restructuring of work and private life around digital infrastructure. The experiences in the public and private sector that we present in this book make it clear that today's picture is path-dependent, that is, it is the result of specific social, political, and technical elements that make Norway a special case of a digital transformation process involving deep core changes of entire business models. It is therefore worth it to reflect on what are relevant characteristics of the Norwegian case and what lessons can be drawn. As a result, we ask: *How did digital transformation unfold in Norway, and what were the enabling conditions?*

The answer to this question is complex and multifaceted. The purpose of this chapter is to draw the contour of an initial answer in Sect. 2. The following chapters will then continue the conversation by looking at different facets based on in-depth case studies from public and private organizations. For now, we start by pointing to some concrete examples which we believe are illustrative of the Norwegian approach to digital transformation and some of its key enabling conditions.

2   Digital Transformation, the Norwegian Way

To trace the Norwegian experience with digital transformation, it might be interesting to start by asking when digital transformation started in Norway. Research in science and technology studies and related fields has vividly demonstrated that digital transformation is associated with the possibility of quantifying the qualities

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[1] A notable example was the early-stage adoption of the EDI (electronic data interchange) standard in the 1980s to share patient journals [4].

of human and natural phenomena, such as territories into borders, people into statistics, and perceptions of hot/cold into measurable temperature [6, 7]. This translation of quality into quantity is a key antecedent of what we today call data-driven decision-making [6]. This has been done, for example, for taxation [8] and census [9] purposes. This perspective would then invite us to set a tentative start date to digital transformation in Norway in 1967, when Folketrygdloven ("The National Insurance Scheme") first took effect [10]. The aim of the law was—and still is—to provide a compulsory insurance scheme for all people living in Norway so that they would receive financial support from the State in case of reach of pension age, illness, unemployment, maternity/paternity leave, accidents, rehabilitation, and so on. Such a systematic and centralized structure is dependent on having a sufficient and updated overview over citizens' data across different areas, for example, labor, welfare, healthcare, employment, taxation, and so on. Arguably, and not specific to Norway alone, this has been a key driver behind the Norwegian State's investments in better and more integrated digital systems to share citizen data across silos. Part of the reason for this is that Norway has a relatively small population while being one of the richest countries in the world. As a result, the State's investments in information and communications technologies (ICT) have been significant over the years.

Furthermore, part of the roots of digital transformation in Norway are tightly interwoven with the Scandinavian or Nordic model generally characterized by a strong welfare state, a trust-based system between authorities and citizens, and a three-party collaboration approach involving the State, business organizations, and workers' organizations (particularly unions). The development of the early-days computing applications, also in private organizations, happened indeed in this particular context in the 1960s, 1970s, and 1980s under the umbrella of what came to be known as participatory design (PD). The aim of PD was to raise the voices and include the knowledge of less powerful stakeholders in the design of IT systems that were oriented toward actual work practices [11]. While PD has spread across several European countries, several important projects took place in Norway, Sweden, and Denmark directly involving trade unions, who had the opportunity to influence power relations in the workplace through the design of IT (ibid). While it is debatable to which extent the PD-oriented tradition is still alive in Scandinavia in the 2020s, it has left an underlying heritage in today's digital transformation in Scandinavia and Norway.

Let us now look closer at three concrete examples.

A first example comes from the public sector and is represented by a public communication platform, Altinn.[2] Currently, Altinn is a platform that supports digital communication with the public administration for citizens and companies which includes a common solution for authentication and login. Altinn was not born as platform, however, but as a government portal for the mandatory reporting of company's financial statements [12]. Started in 2003, the architectural solution provided by Altinn solved a very specific bureaucratic problem: already in 2005, it

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[2]https://www.altinn.no/

made it possible for the Norwegian Tax Administration to generate a citizen's or organization's tax statement by integrating data across the national population registry and the national registry of business, banks, and insurance companies. A turning point was the adoption in 2006 of ID-porten, a public authentication gateway developed by the then Agency for Public Management and eGovernment that provided a standardized login and a flexible solution for different commercial electronic IDs to be used (ibid). This facilitated the integration of services and user communication *across public and private actors* to a degree that is almost unprecedented [13].

At a first glance, the Altinn platform is a fascinating piece of technology consisting of a modular platform ecosystem[3] enabled by shared infrastructure and standards. However, its success is context-dependent and goes beyond technological aspects. The cross-silo integration it offers is possible because the Norwegian State is allowed to access citizen's financial information with high granularity. In a democratic regime, this can only happen under the auspices of a *trust-based* (tillitsbasert, in Norwegian) system among State, citizens, and organizations [11, 15]. In terms of digital transformation, this implies that citizens and companies tend to be willing to share their data because they trust that the data will be used responsibly through efficient control mechanisms. Such mechanisms allow authorities to collect data and use them for specific, limited purposes.

This example also clearly illustrates that *the public sector is a driver of digital transformation in Norway*, as opposed to a simple adopter. While large investments have certainly played an important role, the trust-based relationship between citizens and authorities permeates and affects digital transformation efforts. The troubled genesis of the Smittestopp contact tracing app launched by the Norwegian Public Health Agency at the outset of the covid-19 pandemic in the first half of 2020 further strengthens this observation. In the Smittestopp case, privacy concerns were raised among the population and in the media as the app gathered location-based data in addition to a Bluetooth connection. The Data Protection Agency forbade this form for user data collection, and the app was ultimately withdrawn, redesigned, and re-deployed later that year, however with a low adoption rate [16].

A second example of the peculiar nature of digital transformation in Norway comes from the private sector and is the trajectory of BankID. BankID is a public key infrastructure (PKI) solution that is today the de facto standard solution for electronic identification (eID), authentication, and electronic signing in Norway [17]. In the late 1990s and early 2000s, the spread of Internet services motivated efforts from Norwegian banks to develop their own eID and authentication systems to access online banking services. The Norwegian banks had already "a history of cooperating to develop shared infrastructure whilst competing at the service level" (ibid p. 227) through BBS (Bankenes BetalingsSentral AS; later merged with its Danish counterpart into Nets AS[4]), a company started in 1972 owned by a consortium of Norwegian banks with the aim of developing common information services, standards for

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[3]For a definition of platform ecosystem, see, e.g., the work of Constantinides et al. [14].

[4]https://www.nets.eu/

invoice and accounting, and other information technologies. After several rounds of negotiations and discussions, the banks agreed on a shared standard architecture for identification and signing to be delivered by BBS. BankID was launched by SpareBank 1 in 2004 (ibid).

Such a standardized infrastructure as BankID is often described as remarkable in other countries. It is however important to underline that it would not have been possible without the Norwegian banks' ability to join forces toward the pragmatic goal of improving electronic services. Somewhat reminiscent of the Altinn case, the BBS/BankID solution sheds light on the *strong collaboration and consolidation efforts that have occurred in Norway across public and private organizations*. While such efforts were also motivated by the urgent need to compete against stronger, international players, their *ripple effects* beyond economic competition generated significant technological innovations. Examples abound. One worth mentioning is Vipps,[5] a widespread mobile app that provides a very simple interface and is currently almost the de facto standard for exchanging sums of money between people or between people and companies and which integrates BankID (and the BankAxept payment circuit) to enable electronic identification and payment in online and physical stores.

Contrary to other digital transformation trends that are common across all Nordic countries, this aspect is quite specific to Norway. The Norwegian industrial sector has traditionally had few or no very large ICT companies, differently from, for example, Eriksson and Spotify in Sweden or Nokia in Finland. Whereas big companies would have substantial resources to drive digital transformation, in the Norwegian context, *digital transformation has been largely oriented toward specific applications* and characterized by *concerted cross-organizational and cross-sector efforts* [18].

Finally, a third example of the Norwegian way to digital transformation spans across the public and the private sector and relates to initiatives for open data sharing.

The petroleum sector is Norway's largest industry measured in national income and investments and export revenues and has, as such, contributed significantly to the national welfare state. Diskos[6] (the Norwegian national data repository for petroleum data) is a national data portal established in 1995 and controlled by the Norwegian Petroleum Directorate and a consortium of oil and gas companies operating in Norway. All these companies operating on the Norwegian continental shelf must share the data resulting from their exploration and production operations on the Norwegian continental shelf. While Diskos has the clear goal of promoting transparent reporting to authorities, sharing and trading of data between licensees, and providing access to public data, it is also a unique and successful case of State-mandated data sharing of sensitive business data. Diskos has recently been open for

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[5]https://vipps.no/

[6]https://www.npd.no/en/diskos/

additional players, such as universities in Norway and abroad to access the data for research purposes.

For someone familiar with the competitive nature of the oil and gas business in other countries, such as the USA, the UK, or South America, a shared and open (upon membership) solution like Diskos is almost unimaginable. Yet, it is revelatory of a significant trend in the Norwegian way to digital transformation, that is, Norwegian governments' constant efforts to *mandate data sharing across industries and sectors*, today with the aim of promoting a data-centric economy under the banner of "data as a resource" [19]. This too is the result of the concerted and application-driven nature of digital transformation in Norway. Another important aspect worth mentioning is the conscious and pragmatic choice of building on and *taking stocks of the enormous experience in digital data management developed through five decades of oil and gas activities* toward promoting the so-called Green Shift and lower CO_2 emissions. At the time of writing, the Norwegian government has appointed an expert group with the aim of proposing a set of guidelines for sharing and (re)use of industrial data [20]. The emphasis on digital data and their sharing across industrial domains are indeed at the center of national strategies, where the Norwegian government, for example, writes that "The growth of the data economy is expected to be an important driver of economic growth... Increased access to and better utilization of data within the industry can contribute to start-up companies, growing companies and the established companies developing new business models, products and services" [19].

3   Conclusions

To conclude, although in broad strokes, we painted a picture pointing to some of the most important tenets of the journey to digital transformation in Norway: trust-based cooperation across social partners and across public and private sectors, the public sector's driving role, cross-organization consolidations and consortia, and application-oriented initiatives. It is important to remark that despite promising statistics, this journey has been—and still is—a bumpy ride happening at different rhythms in different contexts. It also contains several unresolved challenges, such as a better inclusion of local districts, particularly in northern Norway, spectacular failures of digitalization projects, and uneven digitalization in the public sector, where data silos still affect service efficiency. Our summary nevertheless indicates that it was none of those tenets alone, but their combination and interaction over the years that have resulted in the picture of digital transformation in Norway as it looks today. In the following chapters, we will try to dig deeper into this by presenting seven empirical case studies, four in the private sector and three in the public sector.

and knowledge with us. We would also like to thank Alexander Kempton for providing feedback and suggestions.

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