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# HOW TO SUCCEED WITH DIGITAL TRANSFORMATION PROJECTS IN PUBLIC SECTOR WITH FOCUS ON MUNICIPALITIES (RESEARCH IN PROGRESS)

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## **Abstract**

*Public sector must undergo radical changes in the years ahead to cope with demographic and financial challenges. The use of technology, building innovation capabilities and digitalization through digital transformation projects are key factors to succeed with change in order to realize expected benefits. Public sector has deep cultural and legacy roots where culture is the hardest part to change, which makes it complex to succeed with digital transformation projects. There are only a few references of relevant frameworks for digital transformation projects in the literature that can be applied directly to public sector. In this paper three hypotheses for future research are identified.*

## **1. Introduction**

A more efficient public sector is required to meet demographic and financial challenges in the years to come. The impact of demographic ageing in Europe will be of major significance in the next decades and will mark a transition towards a much older population structure where the age dependency ratio increases [15]. Public sector need constantly to look for opportunities in order to improve productivity, increase collaboration, improve process efficiency and focus on innovation [13]. To become more efficient the public sector must change where digitalization and the application of new technology are key drivers for change. Advances in and development of new technology can drive significant economic growth [48]. Digitalization requires change in the way public sector organize, produce and deliver services. Change management, change initiatives and transformation projects are important activities to succeed with digital transformation [48]. Leadership competencies in these areas are important for successful digital transformation projects. Public sector need to transform to a future digitized state and the goal of the digitalization is to deliver better outcomes getting more from less and making resources more productive.

Traditional private sector methodologies related to change management cannot be used directly without adaption to public sector needs. Private sector organizations are measured on generating revenue and profit while public sector organizations (in this research: municipalities) are given their tasks primarily by expectations and demands from the citizenry, by law or from the politicians. Public sector is funded by taxes, fees and through financial transfers from other parts of public sector like the government as an example. Service deliveries from the public sector are measured on the agreed quality based on expectations and demands from citizens and how cost-efficient they are delivered. The province of Ontario in Canada has described the goals for its 444 municipalities as: “the goals, on behalf of taxpayers, should always be to provide the best and safest services at the most efficient cost” [36]. To realize benefits municipalities must change through a combination of

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continuous improvement activities and radical change programs. The task of improving quality and efficiency in the delivery of services in the municipalities is a highly variable and complex process with several stakeholder groups where each group have different expectations. The complexity and scope of services delivered by municipalities increases the challenge of change. Efforts to improve and change will be impacted by citizens, divergent political considerations and various agendas of politicians and political parties. Combined, this might result in decisions with good intentions and actions that produce little actual improvement.

Technology has over the last years become more advanced and more affordable. The pace of useful innovations and inventions in various fields (scientific, cultural, social, industrial, and technological) are more rapid than at any time in human history and the current information age can also be called the knowledge and ability era [51]. As Schwab<sup>2</sup> describes it: “the ability of government systems and public authorities to adapt will determine their survival” [42]. There is currently not a model specifically for the public sector related to organisational change, and there is a need for a generic public sector change model [26]. In addition, there is also a lack of systematic literature review on costs, opportunities and benefits using technology in the public sector, and a lack of empirical studies evaluating the performance using technology [49].

The benefits of using technology to digitize municipalities can be huge. However, if municipalities are not able to radically change through successful transformation projects, they will not be able to handle challenges in the years to come and at the same time, keep the level of welfare on the same level or higher in the future. A survey amongst Norwegian public sector organizations in 2014 showed that the maturity level of change management competence, portfolio management, innovation governance and benefit realization were one (1) on a scale from one to five (where *one=ad-hoc* and *five =optimized*) [37]. In a survey from 2015 two out of three top managers in public sector stated that lack of digital competence is a barrier to succeed with digitalization [38]. In a 2016 survey 82% of the respondents agreed that there is a lack of culture and processes to realize benefits of investment and change activities [39]. The assumption is that findings from the three surveys could be valid for the public sector in other European countries since the demographic and financial challenges are similar. Consequently, public sector must become more professional and there is a need to establish a framework for digital transformation. Digital transformation projects are closely related to innovation. Little effort however has been done to analyze and evaluate the impact of innovation in public sector [19].

## 2. The aim of the research

This research (in progress) will examine how digitalization will affect the way public sector (with focus on municipalities) organize, produce and deliver its services, identify key success factors related to digital transformation projects and establish a proposed framework for digital transformation projects in municipalities to realize benefits. Public sector organizations exist on three levels: national, regional (state) or local (municipal). The unit of analysis in this research is municipalities in Norway. Norway is a part of the Nordic region (Norway, Sweden, Finland, Iceland and Denmark). The Nordic region has several similarities, and results from this research should therefore be applicable to the other countries and municipalities in the region. Since the demographic and financial challenges are similar in Europe the assumption is that the findings could be applied to other countries with some modifications in each country.

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The research question for this review:

What are the key success factors for digital transformation projects in municipalities?  
with the following sub-questions:

- a) what are the key factors that prevent municipalities to succeed in digital transformation projects and not realizing associated benefits?
- b) what are the perspectives on digitalization, change and transformation from the top managers in municipalities?
- c) what are the key factors to succeed with digital transformation projects in municipalities?

In next phase of the research a proposed framework will be developed for digital transformation projects in municipalities based on the literature review.

### **3. The literature review**

#### **3.1 Digital transformation**

The term digital can be seen as the emerging trend of digitalization where technology is integrated in all aspects of daily life. This also affect how citizens want to interact with the public sector through digital channels accessible 24/7. Digitalization is the use of digital technologies to change a business model, provide new revenue and value-producing opportunities; it is the process of moving to a digital business [18]. When processes are digitized, models to describe procedural knowledge are needed and such models consist of algorithms, work processes and capacities [21]. Over the past two decades' organizations have been through digital maturation, where processes and functions have been digitized in the transition from analog to digital followed by integrating digitalization across functions with a user-centric view [8]. Municipalities are organized vertically in silos and the challenge is to integrate user-centric services across the silos. The next steps in digitalization is digital reinvention involving the rethinking of customer and partner relationships from a perspective of fundamental customer need combined with multiple technologies including cloud, internet of things, cognitive and mobile [8]. For traditional public sector organizations like municipalities, digital reinvention involves a fundamental, ground-up reconception of strategy, operations and technology and to succeed organizations should [8]:

- pursue a new strategic focus
- build digital competence with a holistic view of products, services, processes
- redefine customer/user experience
- establish new ways of working (identify, retain, and build the right talent to create and sustain a digital organization).

In public sector organizations, the challenge is to move from relatively small changes to start making the big changes (a transformation) supported by ICT and digitized processes with a holistic view of a citizen from birth to death resulting in improved services and cost savings and digital transformation requires change in [5]:

- services (from paper to online)
- processes (change the way public sector operate and manage services internally)
- working practices (with agile project management and governance)
- technology (updating old technology)
- organizational (introducing new and cross boundaries operating models)

Digital transformation of key processes affects products, services, processes, organizational structures and management concepts [30]. This means that digital transformation requires an integrated approach to technology, process and people in order to manage the availability and sustainability of processes [3]. In organizational structure and culture all elements are interdependent (change in one element cause changes in the other element) both within and between organizational levels [33].

The process of digitalizing public sector is complex due to contradictory incentives, vertical structures, employee job security rules and citizen-centric services where no easy solutions exist [16]. Complexity occurs when several interrelated aspects must be considered and it is not possible to view all of them [25]. Characteristics of digital transformation projects are often unforeseen new structures, with unexpected new properties and radical innovation. Such problems/issues are called wicked [7]. The social complexity of wicked is more difficult to manage than their technical difficulties. Handling wicked problems require new leadership skills and competencies to cope with the need for quality, flexibility, adaptability, speed and experimentation. Each activity and effort in implementing digital transformation projects in public sector is unique, have often not been done before and are entwined with other problems like the not invented here syndrome [6].

A digital public sector use internet and the World Wide Web to deliver public sector information and services to citizens [46], “the use of information and communications technologies to improve the functioning of government” [23] and to improve the activities of public sector organizations [32]. In Europe, there has been high expectations of significant cost savings when implementing a digitized public sector [31]. The purpose is to improve performance and provide benefits citizens [50]. A digitized public sector is a collaborative community of public authorities, businesses, citizens and civil society contributing to further development of public sector services [12]. ICT itself does not transform public sector, but ICT can be used in redesigning the ways public sector exchange information internally and externally through collaboration [34]. To ensure success in digitizing public sector a strong central leadership complemented with proactive local and regional initiatives driven forward by local champions are required [31].

Performance indicators are used to measure effects of transformation projects. Performance can measure the impact of working practice and the impact on cost/efficiency [10]. There is a weak correlation between performance indicators and performance itself. The relationship between actual and reported performance often declines and is a phenomenon explained as the performance paradox [45]. To plan and follow up digital initiatives business cases should be used. A business case documents the justification for undertaking a project taking into consideration the total business change. The use of business cases might reduce the risk of unintended performance paradox occurring. If initiatives are not formalized through business cases there are a risk of developing technology-enabled services that do not correspond to the needs of employees, citizens

and businesses [27]. On the other hand, there has been few attempts to undertake a systematic review on the costs, opportunities, benefits and risks that influence the implementation of e-government, and there is a lack of empirical studies that can evaluate the performance [49]. In order to understand the technological change in public sector, how new radical technological solutions can be introduced and at the same time keep providing services required by laws and regulations, the concept of technological capacity as a performance index can be used [28].

Several public sector digital initiatives focus on improving front-end services. In Norway, the government has introduced the concept of digital agenda. The goal of digital agenda is to improve the interaction between citizens/businesses and public sector organizations. However, there is a need to shift from the predominant front-office evaluation of digital public sector to back-office evaluation [33]. Focusing on back-office will bring better insights into the impacts of e-government concerning business process reengineering (BPR), reduction of costs and the effectiveness of public sector organizations. The use of technology also redefines the way public sector should be organized and how the services are delivered. People involved in the provision of public governance should consider, on a regular basis, whether things can be done better and smarter and how creative solutions can outperform old and trusted ones [44]. Despite all possibilities using technology, public sector innovation has tended to be small-scale and gradual due to budget scarcity, group conflict, cultural norms and prevailing patterns of social and political behavior [50].

Digitalization changes the power in relationships between public and private sector, and between public sector and citizens. New forms of governance emerge with consequences for how we understand and exercise citizenship with new technology-mediated processes supporting change processes [31].

### 3.2 Digital governance and innovation

In public sector, digital governance can be compared with innovation since attributes can be mapped into characteristic features of innovation in services, processes and organizational structures [35]. Innovation is a concept which includes the following features: novelty (a change from the current situation), adoption (a change that is embraced by users) and outcome (value) [40]. Digital government evolution consists of four stages: digitization, transformation, engagement and contextualization [24] [9]. Digital transformation projects must cover all aspects mentioned above to be successful. An organizations technological competence (the ability to understand, use and exploit relevant state-of-the art technology internally) combined with network competence have a significant impact on innovation success [41]. In public sector innovation can be defined as executing new ideas to create value and innovation should be managed as a process to secure that innovation is executed [43]. Intangible outputs of an innovation process can be new upgraded services and processes [6]. To succeed with digital transformation projects digital competence and innovation competence are therefore needed amongst [44]:

- politicians (with a need to demonstrate political leadership by advancing new ideas)
- public managers and employees (well-educated, competent and driven by norms to improve services)
- citizens playing an active role in encouraging public innovation.

Innovation in public sector can be further enhanced through collaboration by creating spaces outside the organization (but still close to the service production) where employees, users, managers and policy experts with different professional backgrounds can collaborate with each other [44]. Innovation processes can be incremental (small and continuous improvements to existing practices using technology) or radical innovation (major breakthroughs in technology that changes completely the way things are done, tends to result from research and are more unpredictable) [48]. Public sector is bureaucratic by design and thus incremental in its approach to change [9]. Continuous improvement is unlikely to succeed if there is a lack of senior management support [3].

### 3.3 Digital transformation projects

Digital public sector projects are embedded in combinations of political reforms and organizational changes designed to enact, support and drive transformation in the organization of the public sector [11]. Several digital projects in public sector fails and expectations are not achieved due to the inability to deal with complexity and uncertainty. There is no uniform, standard way dealing with high complexity and uncertainty in situations with many stakeholders and with a standard that works in all situations [25].

The traditional approach of governing IT projects in public sector has been the waterfall approach where requirements were locked down, timetable and progress were set in a linear fashion from design to implementation [5]. Experience shows that large ICT projects in the public sector governed by the waterfall approach in many cases result in excessive cost and time overruns. There is a need for an alternative approach to handle uncertainty, where the upfront design is minimized, with frequent iterations of emerging services interacting with users, and where multidisciplinary teams are given autonomy to manage the uncertainty and adapt as the project progress [5]. Agile projects can be an alternative and are driven by user research, iteration and flexibility thereby reducing the risk that is taken in each part of the project. Agile methodology can reduce the risk of cost and time overruns. In agile projects, core project and programme management disciplines like managing risks, engaging stakeholders and monitoring dependencies are still needed and it is still necessary to work towards a completion date. Changes in the environment, expectations from stakeholders and technological development during the project period require organizations to adapt fast to changing conditions [25].

Drivers for change projects in public sector are the need to save money, improve services and mitigate the risk of failure related to implementing new ICT solutions [5]. Using technology in public sector requires organizational change, and to realize productivity gains a fundamental take-up of opportunities through a transition towards fully digital operations is needed [14]. Dynamic capability, in addition to transformational leadership, interpersonal skills, entrepreneurship and network governance skills, are essential characteristics in leadership competence to succeed with transformation projects [29]. To succeed with digital transformation, organizations need to establish governance processes on management level [30]. A successful transformation towards a digital public sector need to look at the *digital public sector-as-a-whole* concept (connected public sector) which focuses on provision of services at the front-end supported by integration, consolidation and innovation in back-end processes and systems to achieve maximum cost savings and improved service delivery where technology is a strategic tool and enabler for innovation [47].

The concept of stakeholders is defined as any group or individual who can affect or is affected by the achievement of an organizations purpose [17]. Stakeholders are described as those who can make demands on an organization, those who can affect the organization and those who are affected

by the organization [1]. Risk can be reduced by transparent communication and by streamlining stakeholder interaction through mapping stakeholders [2]. In public sector stakeholder engagement benefits include: increased efficiency in and effectiveness of services, improved risk management practices (allows risk to be identified earlier and by that educing future costs, ensuring services are delivered in collaboration with stakeholders and enhanced capacity to innovate [20]. Examples of interest groups in public sector can be municipal executive board, municipal council, political parties, governmental agencies, users of the service delivered, ICT department, chief municipal executive, managers, employees, unions, lobbyist, media and suppliers. Various interests and power from diverse stakeholder categories can be a success or failure for e-government and stakeholders interest should therefore be related to achieving the goals of a digital public sector [2]. Technology can change or strengthen the power structure [4]. Based on the new power structure implementing technology can create conflicts and the implementation will of that reason be a result of negotiations between involved interest groups in the new power structure.

### 3.4 Potential outcomes

There can be nine potential outcomes of how government works and what it costs [22]:

	Cost level →		
Quality level ↑	1 Worked better, cost less <i>Did better with less</i> <i>('Dream' outcome)</i>	2 Worked better, cost the same <i>Did better with the same</i>	3 Worked better, cost more <i>Did better with more</i>
	4 Worked the same, cost less <i>Did the same with less</i>	5 Worked the same, cost the same <i>No change</i>	6 Worked the same, cost more <i>Did the same with more</i>
	7 Worked worse, cost less <i>Did worse with less</i>	8 Worked worse, cost the same <i>Did worse with the same</i>	9 Worked worse, cost more <i>Did worse with more</i> <i>('Nightmare' outcome)</i>

The dream outcome (cell number 1) might be a result of smarter management, better technology and the promotion of a more favorable image of the government. The goal of digital transformation projects should move public sector organizations like municipalities upwards and to the left in the diagram.

### 4. Conclusions

Public sector must become more efficient to meet future demographic and financial challenges. To become more efficient, change is required, where change is driven by digitalization and implementing new technology. Public sector must transform to a future digitized state where people, processes and organizational structures must change. To realize benefits a framework for digital transformation is needed. The goal of digital transformation is to deliver better outcomes using less resources by reinventing the way services are produced and delivered. Digital transformation projects are 20% about technology and 80% about people, processes and organizational structure. Building digital leadership competence is crucial to succeed with digital transformation projects. Digitalization mean that technology is integrated in all aspects of life across organizational boundaries. Digital transformation requires a fundamental, ground-up reconception of strategy, operations and use of technology. Based on the literature review a proposed framework

for digital transformation projects is developed. The following proposals and hypotheses have been developed:

**P1:**

Municipalities are not able to meet future demands and expectations without digital transformation. Top managers in the municipalities do not have the capabilities or skills needed to implement digital transformation projects.

**H1:**

There is a positive relationship in municipalities where the municipal chief administrative officer has digital competence/skills and number of digitized services implemented.

**P2:**

Municipal chief administrative officers must have skills in project and change management to succeed with digital transformation projects

**H2:**

There is a positive relationship in municipalities where the municipal chief administrative officers have leadership skills in project and change management, and the number of successful digital transformation projects implemented.

**P3:**

The culture in municipalities with their conservative thinking, change resistance on all levels and leaders who are risk averse is an obstacle to succeed with digital transformation projects.

**H3:**

There is a significant relationship in municipalities where the municipal chief administrative officers have a risk-averse culture and lack of plans for benefit realization  
The next phase of the research is to verify the hypothesizes with a quantitative analysis. A questionnaire will be developed and sent to all the chief municipal executives in all municipalities in Norway. Based on the findings a proposed framework for digital transformation projects in municipalities will be developed.

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