

On the impact of technology on the workforce of government

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ABSTRACT

The digital transformation of Dutch municipalities is in full swing. One important but underexposed point of attention is the impact of technology on the work of employees. Managing this impact is an important condition for success, according to Municipal A&O Fund, which conducts research in the Netherlands and issues advice on how municipalities can handle the digital transformation.

This policy paper highlights the backgrounds, working methods, results and recommendations formulated by A&O Fund within the Dutch context. With this, A&O Fund wants to draw attention to this aspect of digital transformation, and also invite others to join efforts in this perspective.

CCS CONCEPTS

• **Applied computing** → **Computers in other domains** →
Computing in government → *E-government*

KEYWORDS

"Impact", "Technology", "Workforce", "Municipalities".

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1. DIGITAL TRANSFORMATION IN DUTCH MUNICIPALITIES

In 2019 the Netherlands counted 355 municipalities. This means that in about 30 years the number of municipalities has halved due to reclassification and scaling up. About 10% of these municipalities have more than 100,000 inhabitants. In total, almost 40% of the Dutch population lives in these cities, which are often closely linked geographically, which is no surprise given the limited size of the Netherlands. Dutch municipalities have an extensive range of duties, and provide around 200 different services to citizens and businesses, both in the areas of social care, education and culture, planning and management of the physical environment, and economic development. In addition, municipalities enjoy a high degree of autonomy within the Dutch institutional structure, certainly with regard to the way in which they perform and organize their tasks.

The Netherlands is generally known as a pioneer in the field of digital innovation[1]. The government has invested heavily in digitization programs in recent decades, stimulated by the Digital Agenda of the European Commission. Dutch municipalities have played an active role in this development, since they are largely the service counter for citizens and businesses. A large part of the services of municipalities have now been digitized, which is partly made possible by the construction and design of a joint national digital infrastructure.

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The Labor Market and Training Fund Foundation (A&O Fund) for Municipalities was founded in 1993 by the social partners in the municipal sector[2]. Municipal A&O Fund is a partner of municipalities with regard to organizational issues and the personal development of municipal employees. A&O has three main tasks: 1) fulfilling a guiding function, by collecting, developing, enriching, sharing and disseminating knowledge and information; 2) putting issues on the agenda, by identifying and stimulating initiatives and innovation, and 3) filling in a platform function, by connecting municipalities and employees on themes and projects.

In recent years, A&O Fund has conducted targeted research into the consequences of digital transformation for municipalities. This has been done through case studies, literature research, network meetings and quantitative research. Central to this were three topics: 1) the impact of digital technology on the organizations of municipalities, 2) the consequences of this impact on the work of municipal employees and 3) the way in which administrators, managers and employees can anticipate this impact and effects.

These studies have shown that municipalities can expect considerable impact the coming years in the way work is structured and executed within municipalities. With its investigations, the A&O Fund wants to raise awareness on the upcoming impact on the organization and staff of municipalities. In addition, A&O Fund wants to provide concrete guidelines for higher management in municipalities to anticipate the consequences for their organizations and staff, and in that way fulfill their role as a reliable and caring employer towards their employees.

This policy paper has two objectives:

- In the first place, this letter is intended to describe the concrete case of the Dutch municipalities, showing what impact of new technology is foreseen and what anticipatory organizational measures are being taken.
- Secondly, this paper is intended to encourage policymakers and researchers worldwide to pay more attention to the issue of disruptive impact of technology on organization and staff, given the importance of the social innovation that is part of digital transformation.

2. SHAPING AND BEING SHAPED BY DIGITAL TRANSFORMATION

Digital transformation refers to the use of new technologies like the internet of things, artificial intelligence, big data analytics and robotics in our current world. The World Economic Forum has declared it to be one of the main drivers behind the Fourth Industrial Revolution that is now taking place[3]. It is about “transformation” because a lot of change is expected as a result

of all these technologies. That is why “digital transformation” as a concept differs radically from the concept of “digitalization”, which has been the major frame the past decades .for business and government when putting digital technology to use.

Digital transformation is high on the agenda of governments worldwide. The new European Commission (EC) has recently made digital transformation one of its political priorities for the coming years[4] and national governments are called to account for their role as shapers of the digital transformation. For example, they must safeguard citizen privacy, restrict the power of big tech companies, guide the transition of the economy, stimulate innovation, etcetera. However, the role of governments extends further than merely being a (co) designer of the digital transformation in their role as policymaker. Governments themselves must also innovate in order to absorb new technology as organizations, and to be able to deliver more and better public value. In other words: they are not only shapers of the digital transformation, but are also shaped by the digital transformation.

Although the impact of new technologies on organizational workspaces has been widely studied in the context of private and public companies, in the current discourse this aspect receives little attention. We see three possible reasons for this lack of concern to the social impact of technology in organizations:

- In the first place, the impact of digital technology in recent decades on government structures and the work of civil servants has been relatively limited[5]. This recent history creates a mindset of "business as usual" when it comes to the impact of the wave of new technology.
- A second possible reason is that governments are still strongly focusing on the current use of information technology in their back- and front-offices, also in terms of budget and staff. The attention needed for these legacy systems leaves little room for new initiatives on digital innovation.
- Finally, a third possible reason is that the robot alarm at the beginning of this decade[6], warning that human roles in work processes would be replaced by technology in a short term, has been considerably nuanced[7] [8]. In fact this robot alarm is more or less redefined: it is less about replacement and more about complementarity between workers and technology[9].

3. THEORETICAL POINT OF VIEW ON IMPACT ON WORK

In its vision on the impact of technology, the theoretical assumption of A&O Fund is that technological innovation does not take place without social innovation. Successful application

of technology within municipalities is often the result of a mix of technological and social factors, and will have an impact on the work of civil servants. Not only implementation will have an impact, though. Also the absence and lack of digital innovations can have a considerable (negative) impact on the workforce.

The impact on work has in essence two dimensions: one qualitative (level of satisfaction in work) and one quantitative (number of people employed). Both dimensions can vary from "more" to "less".

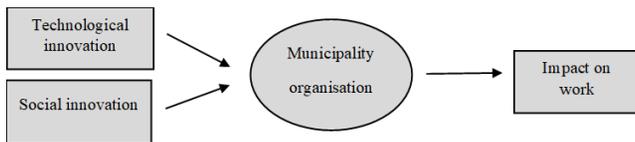


Figure 1: technology impact model on municipal work

This model is derived from the well-known technology enactment model in government as developed by Fountain[10]. It also fits with the concept of innovation systems, where innovation is seen as a multi stakeholder process, within a certain political, economic, cultural and institutional context[11].

In its investigations, A&O Fund tries to specify where the impact of technology will occur within municipalities, what the consequences will be for the work of employees, and how management and staff can anticipate these consequences. Neglecting or underestimating this discussion means that municipalities are less successful in digital innovation, with consequences like:

- not delivering on public value;
- not functioning well in networks;
- not operating effectively and efficiently;
- not attracting employees;
- not a disruptor in digital innovation;
- not able to compete with challengers on the same task.

4. A NUMBER OF RESULTS OF THE STUDY

A&O Fund investigations the recent years have already brought forward a number of relevant insights. Some important conclusions[12] [13] [14]:

- Different municipal processes are impacted differently the coming years: immediate impact (< 3 years) is anticipated in 35% of the processes, coming impact (3-7 years) in 21% of the processes, and slow impact (> 7 years) in 43% of the processes.
- Tasks that will encounter immediate impact are routine tasks in administration, inspection, and

service delivery. Various examples are already visible in practice, such as: use of satellite data for road inspection, deployment of scan cars replacing parking guards, use of chatbots within customer contact centers, use of sensors to measure sound and air quality, application of text mining when complying with open government requests, deployment of sensors in waste management directing the routes of waste trucks, etcetera.

- More advanced tasks in municipal business processes are also impacted by new technology. See for example the use of algorithms for financial controls, data analytics in human resource management, smart contracts for procurement, etcetera.
- More than a third of the municipal employees perform work with a high degree of routine and repetitive tasks that can be taken over by technology. These employees will certainly be in the "danger zone" in the coming years. Extra complication is that these employees work to a large extent within relatively smaller municipalities (< 50,000 inhabitants), that generally have a less extensive and developed set of tools for human resource management and social policy.
- New technology does not only entail risks for the workforce: in some cases the quality of the work increases, for example because the work becomes more comprehensive and meaningful with the help of technology. In addition, next to jobs that drastically change or disappear, also new jobs appear, for example data analyst, algorithm auditor etcetera.

5. TOWARDS AN MANAGEMENT PERSPECTIVE FOR LOCAL AUTHORITIES

In the coming period, the focus of the research will shift towards monitoring the developments in specific policy domains of the municipalities. With this zooming in, A&O Fund wants to gain a better insight how work processes change through the use of technology, and which measures are successful in anticipating organizational and personnel consequences. To this end, A&O Fund has developed tools and will conduct further domain specific research.

Next to monitoring, A&O Fund will invest in building capacity on digital leadership, management of digital innovation, and a datadriven policy mindset in municipalities. One particular field of interest will be new models for re-and upskilling[15]. A&O Fund is hereby following the recommendations of the World Economic Forum[16], that defines digital transformation mainly as a revolution in (re)skilling the current workforce for future competences.

Moreover, A&O fund is interested in the way in which the use of modern technology can help with new models for learning.

The promise of e-learning has not yet been delivered within the practice of municipalities. In view of the necessary effort in (re)skilling, the use of modern digital tools will be unavoidable.

6. TO CONCLUDE

The impact of technology on work is a topic that requires serious attention, not only at the level of local government but at all levels of government. In the Netherlands, A&O Fund will continue to do research on this topic, helping municipalities to navigate the digital transformation. A&O Fund is open for partnerships with other governments and academia, to share research results and discuss policy recommendations.

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