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# Utilizing an Investment Instrument for Digital Transformation: A Case Study of a Large Swedish Municipality

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**Abstract.** The digital transformation of the public sector constitutes a major challenge for public sector organizations and governments alike. At the core of this transformation lies the increased emphasis on utilizing digital solutions to develop and deliver services that assure the continued relevance of the public sector. This study aims to explore how municipalities are utilizing the investment instrument for digital transformation. The Precursory findings present the digital transformation of the public sector and the role of investments in the public sector digital transformation. The research is based on a qualitative case study with an inductive approach. Key was to discover the practitioners' perspectives on how they perceive the investment instrument for digital transformation. The findings show that municipalities manage digital transformation in a short term perspective as an operating expenses (OPEX) rather than in a long-term capital expenditures (CAPEX) perspective to finance digital transformation.

**Keywords:** Digital transformation, Investment, Public sector, Operating expense, Capital expenditure.

## 1 Introduction

The digital transformation of the public sector constitutes a major challenge for public sector organizations and governments alike (Yoo et al., 2010; Vial, 2019; Mergel et al., 2019). At the core of this transformation lies the increased emphasis on utilizing digital solutions to develop and deliver services that assure the continued relevance of the public sector (Janssen and Van Der Voort, 2016). At the same time, there is a lack of pace in initiating digital initiatives in the sector (Fehér and Szabó, 2018). The public sector is not amply prepared for the new logic of digitalization, since the checks-and-balances are built for continuation rather than disruption. This situation has been described as “digital sclerosis” by Andersen et al. (2020). Part of this lacking ability for swift action in regards to digital transformation is attributable to existing IT Governance configurations. IT Governance practices are dominated by a logic where the IT function as a central actor in any digitalization initiative is poised to counteract any shift in demand from the internal users. As noted in a study of two large agencies, Magnusson et al. (2020) identified fundamental challenges with the existing configuration of IT Governance. They are tasked with delivering IT to the users with the highest level of efficiency,

and hence measures have been put in place to make sure that there is no fluctuation in demand of new services which would negatively affect the internal efficiency of the IT function (Magnusson et al., 2020). In this situation, digital initiatives are predominantly treated as operating expenses (OPEX) for the users. If a new initiative is required, the full cost of the new initiative will need to be funded through OPEX by the initiating party. In a situation where the underlying infrastructure is under heavy duress and to a large extent obsolete and non-purposive for modern technologies (Riksrevisionen, 2019), a substantial amount of funding is needed for not only the initiative itself, but also the underlying infrastructure. This creates a threshold for new initiatives, while at the same time counteracting the long-term development of the infrastructure.

From the literature on the capital structure of the firm (Miller, 1988; Gomes, 2001; Hilary et al., 2019), prior research has identified a need for balancing investments i.e. capital expenditures (CAPEX) with the use of OPEX to fund new initiatives (Memuletiwon et al., 2018; Vartiainen et al., 2019). For example, funding of assets that will have a long economic lifespan and give returns over longer periods of time such as infrastructural elements should be handled as investments, whereas short-term initiatives, for instance an application for Covid-19 reporting, would be handled as spend. With the existing funding models for digital initiatives in the public sector almost completely void of capital expenditure (CAPEX) funding (Magnusson et al., 2020), there is a discrepancy between theory and practice that warrants additional studies. On the basis of this rationale, this study aims to explore:

*How are municipalities utilizing the investment instrument for digital transformation?*

The research question is answered through a case study of a large, Swedish municipality currently in the midst of a major digital transformation program. The case study was initiated in 2018, and has involved several iterations addressing different research questions. For this particular study, a series of directed interviews were conducted in the spring of 2020.

The paper is organized accordingly: After the Introduction, an overview of the Precursory findings within both the digital transformation of the public sector and the role of investments in this context is presented. This is followed by the Method, which describes the choice of scientific approach, the interviews and method of analysis. The Results is then presented, followed by the Discussion where the findings are analyzed and discussed in relation to previous literature. The Conclusion section provides an answer to the research question. Finally, suggestions for future study are presented.

## **2 Precursory Findings**

### **2.1 Digital Transformation of the Public Sector**

Digital transformation is the profound and accelerating change of business processes, services and structures, workforce competencies, corporate culture, and partner ecosystems, laws, and regulations, to fully leverage the opportunities brought by digital technologies and their impact across society in a strategic way (Brynjolfsson and McAfee,

2011; Gray and Rumpe, 2017; Vial, 2019). In the literature digital transformation is understood and articulated as a multi-dimensional phenomenon driven by increasing technology use, politics and society (Vial, 2019). Currently, it is used synonymously with digitization and digitalization but its meaning and use is not always articulated. Reflecting on Vial's (2019) observation that digital transformation is quite different from IT-enabled transformation, makes it clear that it is a complex and disruptive process (Kane et al., 2019), involving a range of actors and blurred boundaries (Nambisan et al., 2017).

Fulfilling digital transformation in the public sector entails new ways of working with stakeholders, building frameworks of service delivery and creating new forms of relationships and new financial frameworks (European Commission, 2013, 2018). From this perspective, digital transformation is challenging for public sector organizations, not the least municipalities.

There is little research that provides insights into how public administrators approach digital transformation initiatives in terms of actual practices that relate to different agendas (Mergel et al., 2019). Frennert (2019) argues that municipalities' budget and strategic planning model is set for up to several years in advance, making technological changes hard to accommodate which in turn may lead to missed opportunities or to procuring irrelevant technologies. Also, costs of technology and insufficient knowledge of digitalization may continue to negatively affect the inclusion of digitalization (Noh, 2019). Recent literature also highlights internal conditions including culture, individual competencies and mindset as important for digital transformation (Mergel et al., 2019).

## **2.2 The Role of Investments in the Public Sector Digital Transformation**

Digital investments have a long track-record of study within the area of IT-related investments. Since the advent of IT, researchers and practitioners alike have tried to analyze how digital initiatives for instance technologies and systems impact performance (Dehning and Richardson, 2002; Peppard and Ward, 2005; Goldfinch, 2007).

As noted by Bannister and Remenyi (2000), the research has largely been made more difficult with the very nature of the impacts of IT as problematic to delineate in both time and space. The overarching debate concerning the value of digital investments is one that stands between research that finds positive performance effects of investments (Brynjolfsson and Hitt, 1996; Pang et al., 2014; Goh and Arenas, 2020), opposed to the ones that find negative performance effects (Chae et al., 2018; Ho et al., 2017). In other words, research displays conflicting results, which has been argued to be an effect of a lack of disaggregation of the digital initiative as such, where it may be too large an object to derive sound findings from (Ho et al., 2017).

An alternative perspective to the role of digital investments would be one that questions the very basics for what is perceived as an investment. Within accounting, an investment is an instrument where capital i.e. own or loans is utilized in order to assure future earnings (Gomes, 2001). In other words, there is a sharp delineation between what constitutes spend and investment. This sharp delineation is predominantly void in the literature concerning it-related investments, and in most studies the IT-budget

equates to the total amount of IT investment in an organization. This low level of construct validity concerning investment in the prior research may be one source for discrepancy in the findings.

Investments are used to accrue costs over the expected financial lifetime of the investment object. To do so, excess capital is used to cover the investment, resulting in capital expenditures CAPEX instead of operating expenses OPEX. The past decade has seen an unprecedented shift away from CAPEX as a means to fund digital initiatives, partly an effect of new operating models for IT (Magnusson et al., 2020) in combination with increased cloud delivery of software (Schneider and Sunajev, 2016).

Prior research in finance has acknowledged the double-edged sword of CAPEX based funding. This is addressed in the literature on the capital structure of the firm (Miller, 1988), where an over-emphasis on e.g. loans blocks future opportunities for maneuverability through lock-in effects that come with the financial lifetime of the investment objects being substantial (Tanzi and Davoodi, 1998; Hilary et al., 2019). At present, there is no oversight of the capital balance in relation to digital initiatives in the public sector. At the same time, there is a high level of isomorphism between digital funding models among the organizations in the sector, and that the predominant funding model in Sweden is one solely based on OPEX (Magnusson et al., 2020). This raises the question if this hypothesized capital structure with full CAPEX and no OPEX is sub-optimal, and increased insight into the use of investments to fund digital transformation is warranted (Hilary et al., 2019).

### 3 Method

The research is based on a qualitative case study with an inductive approach, which is appropriate considering the explorative character of the study. Key was to discover the practitioners' perspectives on how they perceive the investment instrument for digital transformation (Creswell, 2014, Yin, 2017).

The setting for the study is a large Swedish municipality with a total of 100,000 citizens, 9,000 employees and an operating budget of €600M (ekonomifakta.se). The rationale was quite a new digital agenda initiative with substantial allocated resources in the organization. This permitted a long-term commitment with the organization, which gives added value in terms of easy access to the investment budget development process, rich data collection and thus, an opportunity to illustrate municipality investment practice regarding digital elements.

#### 3.1 Interviews

After discussions with representatives from the municipality IT department, the interviewees were selected according to their engagement in the investment practice (see Table 1). They all took a special interest in digital transformation. Eight semi-structured interviews through five physical meetings in the workplace and three online meetings were conducted. Each interview ranged from approximately 45 to 60 minutes and was

recorded on the author's computer and then anonymized, as accepted by all interviewees upon asking. The recorded material was then transcribed verbatim in Swedish and then translated into English.

**Table 1.** Interviewee's position, organization and responsibility in the municipality.

Position	Organization	Responsibility
Finance director	Municipality	Link up feasibility studies, decision making, financial monitoring, effects and future needs.
Finance administrator	Municipality	Accounting and estimate future financial costs.
Finance manager of Children and Education	Municipality	Authorize investments.
Municipality accountant	Municipality	Following up of investment budget.
Assistant municipality chief executive	Municipality	Analysis of investment needs.
Controller	Municipality energy company	Profitability calculation and assessment of budget and forecasts.
Unit manager	Municipality water company	Coordinate investments and make sure they are in line with budget.
Section manager	Municipality building company	Communicate needs concerning buildings

### 3.2 Method of Analysis

Braun and Clarke's (2006) phases of thematic analysis were utilized as a method to shift from raw interview material to themes. The analytical process started with carefully reading and re-reading the transcribed interviews and noting initial ideas in order to be familiar with the depth and breadth of the interview material. Codes were colored which yielded initial codes for instance regulation, digital investment, prioritization and digital elements. Similar codes were then grouped together and sorted into initial themes such as understanding digital transformation, improving the prioritizing process and configuring the investment budget. Finally, four overarching themes were chosen; (1) Investments are made in a traditional way, (2) IT service handles the digital transformation, (3) Digital transformation is not well understood and (4) Prioritizing is not an easy task.

## 4 Results

The results present how municipalities are utilizing the investment instrument for digital transformation. It is structured according to the inductively identified themes. Each theme is described and illustrated through extracts from the transcripts.

### **Investments are made in a traditional way**

*“We invest in a traditional way.” (Finance director)*

Traditionally, the investment budget process starts by each administration making a plan of their local needs. It is then presented to the central building strategist who makes a further needs analysis for the municipality based on demographic development for each couple of years. The politicians then decide what investments should go ahead based on what has been suggested by the municipality. In addition, the municipality has a real estate strategy, plans for local needs and for local destruction, goals- and resource plan, guidelines and financial control rules. These documents are worked together with rules used for following up, keeping and not overspending the budget. Then there are accounting laws and The Committee for municipality accounting recommendations. The Finance administrator elucidated sometimes they are not only in need of money but of staff who can manage and implement the investments. Moreover, there is a need to consider a line between what is investment and what is not. The Finance director added that they check if previous decisions need implementation or not. What does the demographic development look like? i.e. to create an understanding of the business environment and maybe reconsider previous decisions in order to make new ones. Generally speaking, preschool or school places need, that may exist because that can be evaluated based on issues of the work environment and it can be based on social aspects, i.e. on the citizens in the municipality. They have not come up with great innovation ideas in the municipality when it comes to investments.

*“Right now, there are no digital elements in the investment budget. I think it's because the organization is digitally immature.” (Assistant council chief executive)*

There is a clear vision and plan for traditional investments in buildings and streets. The results demonstrated that digital elements are excluded from the investment budgets of the municipality. Instead, digital elements in particular and digitalization in general is completely funded through operating expenses (OPEX), i.e. a small centralized budget for digital transformation and decentralized funding utilized for buying centrally delivered services from the IT function. This result goes with Hilary et al. (2019) who emphasized the need for increased insight into the use of investments to fund digital transformation is warranted.

### **IT service handles the digital transformation**

*“The problem is that the municipality has an internal IT service and we rent the services available. The problem is that we cannot make investment without it being an ongoing cost.” (Finance manager of Children and Education)*

Digital transformation was not understood as an investment per-se and thus, not included in the investment budget. Rather, they referred to it as a “service budget”. Inclusion of digital transformation initiatives in the municipal investment budget ranges

between 0 to 0,5 percent. Digital infrastructural elements for instance cameras, sensors, wifi or broadband are not included. All of the interviewees agreed on the need to increase the assigned budget for digital transformation. There is also a need to know what digital legacy they can leave aside.

*“Out of the total investment budget there is 0,5 % digitalization allocation. It does not include cameras, sensors, WIFI or broadband.” (Finance administrator)*

The budget allocated for digital transformation is used for leasing. Thus, there is a need for real digital investments. They need to be a natural part of future budgets as any other investment such as water and electricity. The interviewees mentioned the rapidly increasing development process and digital element costs as obstacles for utilizing the investment instrument for digital transformation. They are not considered in the budgetary framework which is a risk factor. Digital elements are in a separate budget as operating expenses (OPEX) with a very small sum of money. Together with the leasing status, this creates consequences for digital transformation. These findings are compatible with Magnusson et al. (2020) that the past decade has seen an unprecedented shift away from CAPEX as a means to fund digital initiatives, partly an effect of new operating models for information technology (Magnusson et al., 2020). Thus, it is not investment at all rather it is solely a support service. To utilize investment instruments for digital transformation is not an easy mission.

### **Digital transformation is not well understood**

*“You have to define digitalization to me because we end up in that type of discussion in the municipality” (Finance director)*

*“It is lack of knowledge about new technology” (Section manager)*

*“The politicians must understand the need and that is a huge pedagogical task” (Assistant council chief executive)*

According to theory, digital transformation is a multi-dimensional phenomenon driven by increasing technology use (Vial, 2019) with a complex and disruptive process (Kane et al., 2019) involving a range of actors and blurred boundaries (Nambisan et al., 2017). The results demonstrated there are misconceptions and a lack of a common understanding of the digital transformation. The Finance director focused on that more narrowly by insisting on cultural challenges more than technical challenges such as new work processes and the ability to change when they adopt a new system.

*“To create a mental journey that is changing their work habits is not easy at all. In the end, it is very much about people and their relations in the business.” (Finance director)*



This goes with Mergel et al. (2019), who highlighted internal conditions including culture, individual competencies and mindset as important for digital transformation. On the other hand, the Finance administrator believed that digitalization can solve all present and future problems. The result also demonstrated there is a lack of knowledge about new technologies and thus, little understanding of its opportunities (Brynjolfsson and McAfee, 2011; Gray and Rumpe, 2017). Thus, understanding of the concept and the new technology as such is not sufficient. There is also a need for user education and training of skills in order to have a mental and cultural change as well (Frennert, 2019; Noh, 2019). Thus, common understanding of the concept, new technology and knowledge transfer are fundamental dilemmas of the investment instrument because they determine the resources needed and its realization.

### **Prioritizing is not an easy task**

*“So, the question is, do we make the right priorities?” (Controller)*

The interviewees were very preoccupied by prioritizing. The Finance director focused on the issue in more detail and expressed the need for a priority model “as it is now a bit subjective to make priorities.” The lack of a clear prioritizing process could be due to time or lack of skills. Thus, they end up prioritizing discussion every second year. They need to put all investments against each other in order to be able to prioritize. The issue is they have reduced the investment budget which is a challenge that’s becoming hard to make priorities. The Section manager stated that they have a mission to prioritize investments generally for all the administrations. Together, they decide what is most important, but it is just about a new building. The local steering committee has to make such priorities. Then they should analyze what creates the most value and what should be prioritized.

*“We need to have a better method for how to make priorities i.e. what creates the most value versus how much resources are needed. “(Municipality accountant)*

*“We must have traditional investments put in contrast to digital investments to get the most benefit in the end.” (The Assistant council chief executive)*

However, the investment budget is based on a structured and democratic needs analysis. Prioritization risks emphasizing doing things right rather than doing the right thing (Drucker, 1995) i.e. there is a risk that innovation is easily neglected. The organization therefore needs to have better control of the balance between doing things right and doing the right thing.

## 5 Discussion

From the result it is clear that the municipality underutilize the investment instrument for digital transformation. There is a restrictive attitude towards including digital elements in municipal investment budgets as they are included and managed through the IT service budget with clear restrictions on how much this budget may contain. Thus, at present there is a separation and lack of a municipal common investment budget earmarked for digital transformation. This leads to a dependence on the IT service department. It is strengthened while at the same time stuck in a type of IT governance that counteracts fluctuations in business and long-term perspective. This has been particularly identified as an inhibitory factor for digital transformation (Magnusson et al., 2020) as it results in a one-sided focus on management and maintenance at the expense of innovation. Digital transformation is thus managed with a short-term perspective. The consequence of using operating expenses (OPEX) rather than capital expenditures (CAPEX) to finance digital transformation, leads to difficulties in a long-term perspective. Digital technology creates options in the future rather than direct benefit, financing via operating means creates a reluctance and inability to handle larger efforts with more long-term benefits. This is in harmony with Gomes (2001) who mentioned an investment is an instrument where capital i.e. own or loans is utilized in order to assure future earnings. Further, there is no regular follow up for increased inclusion of digital elements, for instance hardware, software, equipment and even education costs in municipal investment instruments. The effect of not seeing digital elements as investment objects makes it difficult to prioritize and calculate the benefits. The reason being inadequate consensus on what digital transformation is and what it includes (Frennert, 2019). Thus, it generates a silo situation that contradicts a long-term perspective. Indeed, there is no capital expenditures (CAPEX) for digital transformation.

Indisputable, the current situation leads to difficulties in utilizing the investment instrument for digital transformation and thus, for value creation. Instead, the focus is kept on managing urgent costs issues here and now. For each administration, thus, the consequence of this will be a breakdown of the municipality's overall digital transformation, and an inability to find synergies between digital initiatives. Thus, there is a risk of losing out on long-term perspectives associated with the building and maintenance of an appropriate investment instrument.

## 6 Conclusion and future research

The study showed the municipality manages digital transformation in a short term perspective as an operating expenses rather than in a long-term capital expenditure perspective to finance digital transformation. In other words, the municipality is not utilizing their investment instrument for digital transformation. This causes inefficiencies in the creation of digital services, and hinders the adoption pace of digitalization. In order to reach successful digital transformation there is thus a need for a better balance between efficiency and innovation.

The implications for research are that digital transformation needs to be regarded as a natural part of both an investment instrument i.e. capital expenditures and maintenance and development of digital elements i.e. operating expenses (OPEX). The implications for practice are to create a better common understanding of the meaning of digital transformation as it would facilitate considering it as an investment and adjusting policies accordingly. This is in accordance with Mergel et al. (2019) who argued there is little research that provides insights into how public administrators approach digital transformation initiatives in terms of actual practices that relate to different agendas.

This study is the first step in addressing the broader and deeper understanding of investment instrument practice for digital transformation. It has studied one large municipality; a future study could be to further investigate several municipalities in a longitudinal study and could include citizen perspective as well. This study has opened the door to future investigations into how digital elements can be a homogen part of the investment budget. Another future study could be about how municipalities balance efficiency and innovation through the investment instrument.

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