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Promotion of influence and design features of e-petitions

A quantitative study of relationships and digitalization

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Magister thesis, 15 hp

SPM 2020.01

Abstract

E-democracy may promote influence in political processes. A new e-democratic tool in Sweden is the e-petition. This thesis studies to what extent the e-petition implementations by Swedish municipalities promote citizen influence in political processes and the relationship between variations in citizen influence and e-petition design features. Considering the dynamic nature of digital artefacts and characteristics of digital innovation the design could be diverse, which could impact influence. A quantitative study was conducted through e-mail surveys and review of municipal websites, ranked and compared in two influence groups. This study revealed that influence varied to a high extent, indicating three design features impacting influence. The e-petition promoted influence and a relationship between the influence and design features existed. Future research should investigate the digitalization of the e-petition and characteristics of digital innovation to understand the social and institutional contexts better. If not understood, the consequences may be that organizations are unable to adapt to new circumstances.

Keywords: e-petition, digital innovation, design, influence, e-democracy

1. Introduction and research question

E-democracy is a concept used to explain how political processes in government experience a digitalization. Governments can invite and obtain views from citizens on issues such as legislative changes or changed management of services and programs, with the use of digital technologies (Henman, 2010). At the same time, digital technologies can also be a way for citizens to raise their voices and be politically active (Homburg, 2008) because e-democracy is about increasing citizens' political influence (Lindblad-Gidlund, 2010). Positive impact could be generated for both governments and citizens.

While e-democracy can generate positive impacts in governments and for citizens, it is a form that may lag behind in practice. E-democracy means the use of digital tools for political purposes, seen as digitalization of political activities, in contrast to other forms of digitalization, such as e-service and e-government. E-service is about developing the administration's services and exercising authority through electronic channels, while e-government means increasing internal efficiency, and e-democracy is about increasing citizens' political influence (ibid). At the moment, research indicates that when governments use digital tools, they to a larger extent use them for purposes of service and internal efficiency, rather than politics. A problem with that is that e-democracy may risk being decoupled from technology development, which leads to the technology being placed outside the political arena (ibid) and that democratic decision-making may risk shrink, when other areas are "technified" (ibid, 18). At the same time, when digital technologies in government for political purposes are studied, IS research seem to lag behind on investigating these new technologies. According to Belanger, there are gaps to be filled. So, while e-democratic tools for political purposes are lagging behind other digital technologies in government, IS research has so far been unable to fully study these

new technologies. New digital tools could possibly shed new light on e-democracy and the role of digital technologies in government.

In Sweden, the form of digital technologies in political processes are seen as opportunities for citizen participation and influence. This was clear in Sweden's second Democracy Report from 2016 (SOU: 2016:5). An external pressure to use a fairly new digital tool in local governmental level has been generated in Sweden, namely the e-petition. The proposal from Sweden's Second Democracy Report was that the ability in the Municipal Act (SFS 2017:725) for the municipal council to introduce the citizen proposal (Medborgarförslag) should be replaced with an obligation to receive e-petitions from citizens. In this change, the democracy report took citizens' opportunities for influence and participation into account. (SOU 2016:5). Since then, the obligatory implementation has however not occurred and instead municipalities seem to implement the e-petition independently "on their own".

A problem, or challenge, with the independent implementation by municipalities is that not much is known about how the e-petition is implemented and used. Standards for how they are implemented are lacking. In the transition from petitions to e-petitions, it is first of all important to note that different systems use the new information technology in different ways. According to researchers, the institutional design of the e-petition is thought to have political implications (SOU 2015: 96), but at the same time, institutional design is absolutely crucial to how many people participate and whether the systems can lead to effects on agendas and policy decisions (ibid). It could for example be particularly complex to set the right signature threshold, because if set too high it may reduce citizen's motivation to participate. Another hurdle may be authentication, meaning if and how citizens have to register before participating (ibid). If e-petitions continue to be implemented independently on a local level and not much is known about its implementation and use, it could lead to an uncertainty concerning the institutional design with subsequent consequences and the political implication of the e-petition.

The complexity of the institutional design of the e-petition could be further understood by Information Systems (IS) research and knowledge about digital technology and innovation. However, "relatively little attention by social scientists has been devoted to this quintessentially 21st century form of political participation" (Harrison, 2016, p. 1). IS researchers have long argued that we cannot assume that the same technology will be used in the same way and have the same consequences in all organizations. It is known that digitalization is a sociotechnical process where technology is applied in social and institutional contexts (Tilson, Lyytinen & Sörensen, 2010) and the shape and form of digital technology can according to research depend on social practices in the creation and use of technology (Orlikowski & Scott, 2008; Pentland & Feldman, 2007). Actors come with "institutionalized social practices and taken-for-granted technology infrastructures" (Yoo, 2013, p. 231). In this way, social contexts and practices give digital technology implementation and use a changing role.

At the same time, knowledge can be obtained about differences in design of the e-petition by acknowledging that digitalization can have certain characteristics, regarding both digital technology, digital innovation and digital transformation. Studying such characteristics could contribute with knowledge about how the implementation and use of the e-petition by

municipalities in Sweden differ from each other. Thus, e-petition implementations and use in Swedish municipalities are so far unknown and this could result in unknown consequences.

The research field of e-democracy finds value in digital tools for citizen participation and influence. In Sweden an institutional pressure exists since Sweden's Second Democracy Report, stressed opportunities for citizen participation and influence with the e-petition and recommended an obligatory implementation in all Sweden's 290 municipalities. At the same time, the Democracy report noted that differences in technology use of an e-petition system may affect the outcome of the e-petition, namely participation and influence. This difference in technology use is called institutional design. In this thesis a problem is identified in how characteristics of digital innovation could give the design of the e-petition an uncertain look and this uncertainty could further lead to an unclear citizen participation and influence. Due to the open ended character of digital innovation, the institutional design could be different among municipalities, and if design and use of the e-petition differs among municipalities, the e-petition might not receive the same effect in all municipalities, meaning the same citizen participation and influence.

Against this backdrop, it is important to study the institutional design. If the design differs between municipalities, it could affect the goal from Sweden's Second Democracy Report of opportunities with the e-petition for citizen participation and influence.

1.1 Problem definition

E-democracy in general and the e-petition in particular has according to researchers a chance to promote democracy through an increase in citizen participation and influence. Because of the possibilities that e-democracy and the e-petition may offer, institutional bodies in Sweden, through Sweden's Second Democracy Report, creates a pressure on municipalities towards implementing e-petitions.

While the institutional design of the e-petition is something that could impact citizen participation and influence, there are uncertainties of this design. At the moment, the e-petition is introduced by municipalities separately from one another, and this has created a situation where there are no common standards for how e-petitions should be implemented, designed and used by Swedish municipalities. The design of e-petitions is therefore unknown and wider consequences on citizen participation and influence will be difficult to foresee.

We know, based on existing IS research, that it cannot be assumed that the same type of digital technology will be designed, implemented and used in the same way in different contexts. In all, this suggests that it is important to study the design and use of the e-petition, as if it differs among Swedish municipalities, it could affect citizen participation and influence.

Based on the assumptions that design of e-petitions could affect citizen participation and influence, this study investigates if there is a relation, or correlation, between the design of e-petitions and achieved citizen influence. The research question is:

To what extent do e-petition implementations by Swedish municipalities promote citizen influence in political processes and what is the relationship between variations in citizen influence and e-petition design features?

2. Related research

In the following sections, central concepts of digital transformation as well as research related to e-democracy in general and more specifically the e-petition is explored. In the first sub chapter, e-democracy is looked at, in the context of Sweden and other countries. The second sub chapter, digitalization, looks into concepts such as digitizing, digital innovation and digital transformation. In the third sub chapter, it is investigated more in-depth how influence is achieved.

2.1 E-democracy

When digital technologies enter political systems in government, it is described using the concept of e-democracy. Governments can invite and obtain views from citizens on issues such as legislative changes or changed management of services and programs, with the use of digital technologies (Henman, 2010) and is therefore something that contribute to work in governments. At the same time, digital technologies can also become a way for citizens to raise their voices and be politically active (Homburg, 2008) and is about increasing citizens' political influence (Lindblad-Gidlund, 2010). In this sense, positive impact could be generated for both governments and citizens with digital technology. According to Belanger (2012), what constitutes success or failures with digital technology in government for both government and citizens should be understood by researchers. Learning from these concepts of e-democracy, one could further state e-democracy as:

Digital technologies enable governments to receive opinions from citizens and citizens to influence politics in government on issues such as legislative changes or changed management of services and programs.

IS research has tried to approach the field of e-democracy. For example, with the concept of Open Government, there is an opportunity to focus on other digital technologies in government than purposes of service and efficiency and instead putting emphasis on deliberative and innovative aspects of new technologies (Ekenberg, Hansson, Jalal, & Lindgren, 2014). Another researcher, Anttiroiko, tries to go deeper in understanding e-democracy and states that if we are to understand the relevance of digital technology in the change of political systems, we must examine it in relation to the “Four Is of institutions, influence, integration, and interaction” (Anttiroiko, 2003, pp. 125-126). These are explained in more detail as:

- *Institutions*. To what extent are the ICT-based citizen-centered solutions and applications integrated in the practices of existing political institutions and how do they affect actual decision-making processes?
- *Influence*. Are the e-democracy experiments or practices such that people involved may truly influence the issues of interest?
- *Integration*. Is the potential of technology used optimally in integrating the basic elements of the entire e-democratic process, including agenda-setting, planning, preparation, decision-making, implementation, evaluation, and control?

- *Interaction*. Is the potential of technology in disseminating information, facilitating interaction, and conducting political transactions used so as to increase the transparency, efficiency, flexibility, cost-effectiveness, and inclusiveness of a democratic system?

There are however many digital technologies used in government (Henman, 2010; Homburg, 2008; Lindblad-Gidlund, 2010) which introduce a complexity regarding the concepts used. In the Swedish debate, the term e-förvaltning is often used in research and it is possible to distinguish three dimensions of the concept: e-services, e-government and e-democracy. These concept all explain a certain direction for the use of digital technology in government. First, e-service is about developing the administration's services and exercising authority through electronic channels. Second, e-government means increasing internal efficiency. Third, e-democracy is about increasing citizens' political influence (Lindblad-Gidlund, 2010).

Table 1. Key concepts in e-administration

| | |
|--------------|---|
| E-Government | Increasing internal efficiency by the use of digital means |
| E-Services | Developing the administration's services and exercising authority through electronic channels |
| E-Democracy | Increasing citizens' political influence by digital tools |

However, there has been an imbalance found in research on e-government, e-service and e-democracy. Digital technologies in Sweden mostly have been used to enable e-government and e-services, and not e-democracy. Early on, official initiatives and municipal practices were targeting information rather than increasing citizen influence, which could be seen as “consolidating the conventional forms of politics” (Grönlund, 2001, p. 159). Today we do not know to what extent government authorities use e-services, e-government and e-democracy. But by looking into statistical data from Statistics Sweden, we can learn that all three concepts are used, still, it is hard to get a full picture. Concerning e-democracy, we can learn more from the doctoral thesis by Lidén (2011) who looked into the e-democratic tools in Swedish municipalities and who stated that there is a variation in the digital tools used due to structural factors. The thesis provides a broad understanding of e-democratic tools, at the same time it may be difficult to draw a line between e-service, e-government and e-democracy. A second gap is that while the thesis investigates e-democracy, it does not include the e-democratic tool of the e-petition.

By looking globally, we could also learn more about opportunities and challenges with e-democracy. On an international level, e-democracy seems to be under prioritized and implemented to a low degree. Homburg (2010, p. 103-104) analyzed reports on digital transformation in various countries in government according to their sophistication and gathered material from policy documents. Conclusions were that digital technology on national level in countries was regarded something to “realize the idea of administrative reform and to make new public management work”, while consultative and participatory formulations were lacking. In a Norwegian study, e-democracy had a low priority in websites among local governments. The dominant configuration of users was information consumers, as many

websites were managed to give information to citizens. Opportunities for interaction and participation were small (Liste & Sorensen, 2015). A Mexican study regarding government channels for participation reported that the provision of services was greater than channels for participation on local government websites. Twenty-two percent of local government websites included channels for participation in the sense of surveys (Sandoval-Almazan & Gil-Garcia, 2012). That shows that e-democracy is a less factor in Sweden nor on an international level than e-service and e-government.

We can thereby understand that e-democracy is a research field that could imply a need to acknowledge a low use of e-democratic tools. This should mean a need to investigate e-democratic tools to be able to understand why this is the case. IS research has left some gaps which if focused on, could help build the research field of digital technologies in government. First, a gap in the research that is relevant to this study is there is little that has been published about E-government in IS journals, instead e-government articles are published in “government-related outlets” (Belanger & Carter, 2012, p. 367). Second, more studies are needed that look at newer forms of digital technology. New units could be analyzed, for example, digital tools, websites and applications, from which studies on e-government could benefit from comparing findings (ibid). Third, research on e-government should look more at the local level. Instead of conducting studies on national level initiatives, role of e-government at other levels of government, such as initiatives at local and state/province level (ibid). Fourth, it is proposed that to fully develop a theory of e-government evolution, it would imply looking into the role of e-government in participatory democracy which mean allowing for citizens to exercise their democratic rights via electronic means (ibid). This tells us that IS research could engage more in digital technologies in government.

This subchapter has explained that e-democracy give opportunities to government as well as citizens, but that e-democracy is a digital technology in government used to a lesser extent than e-government and e-service, possibly due to an unwillingness to enforce e-democratic tools from authorities. While the concept of e-democracy is approached by IS research, there are still gaps that, if filled, would help us learn more about digital tools in government. Research addressing resistance towards the realization of e-democracy initiatives is detailed in the next section.

2.1.1 Resistance to e-democracy initiatives

While e-democracy might not be used to a large extent in Sweden nor internationally, research has seen that this could be because of actors in government. In a study by Kristoffersson & Drott (2010), the demand for e-services was found to be greater than for e-democracy among municipalities, possibly because e-services do not pose a threat to the representative system. Another study, by Lindblad-Gidlund (2010), aimed to understand government officials’ perceptions of the idea of the 24-hours municipality. The study stated that citizen driven development is complex and wanted to understand why this is and suggested that the complexity could be because of inaccurate methods used or something possibly challenging not yet understood. In their study, only 4,8% of the respondents thought that the 24-hour municipality was intended for citizen participation. Service was instead dominating the understanding among officials in a municipality. This tells us that politicians and government officials can hold views that could imply a low interest in engaging in e-democracy.

Research continue to state that an uninterest in using e-democratic tools could be because of notions that e-democracy challenge the way politics is normally done, which create a tension among government officials and politicians and a resistance to e-democracy. Tensions can occur due to already established traditional roles in politics. According to the “middleman paradox” by Mahrer & Krimmer (2005, p. 37), politicians who are to introduce new forms of citizen participation for political decision-making may be afraid of a displacement of their representation function and would therefore oppose to civic engagement. In this way, the already established politics of the representative democracy could mean using digital tools in government for political purposes, in other words e-democracy, less attractive. Politicians and government officials could hold positions being part of a bigger political culture that could oppose new digital technologies which would increase citizen influence, beyond their representative role. Change could be challenged by “existing institutional arrangements” (Hinings, Gegenhuber & Greenwood, 2018, p. 57). The challenge for the citizen participation with e-democratic tools is to identify the border for how much citizen influence will be allowed by politicians. There may exist a sort of institutional pressure to ensure that changes do not go too far (Grönlund 2001). Government authorities may have a dilemma in how to best deal with pro-active citizens, described by Lindblad-Gidlund (2010) and when participation is planned for, one must acknowledge that participation also includes letting go of control for politicians and government officials (ibid).

However, a question is if digital technologies in politics would progress just like other societal fields. Wattal, Schuff, Mandviwalla & Williams (2010) raise the question if e-politics may experience similar kind of changes as e-business, which has experienced changing competition, better information distribution and replication mechanisms and changing of the supplier–customer relationship. If not, e-democracy may risk being decoupled from technology development, which leads to the technology being placed outside the political arena (Lindblad-Gidlund, 2010).

We could hereby learn that the use of e-democratic tools in government could meet resistance from politicians and government officials and the use of digital technologies for political purposes could therefore become uncertain in governments. Hence, while e-democracy might deliver good opportunities for citizen participation and influence, research is telling us that e-democracy might not be sought after by government officials and politicians and this could have implications on the use of e-democratic tools.

2.2 The process, characteristics and outcomes of digitalization.

IS research has long argued that we cannot assume that the same technology will be used in the same way and have the same consequences in all organizations. This is argued to be because of the social interaction with digital technology, which could result in different implementation, use and design of a digital technology in a certain context. Below I connect to key concepts used in IS research to showcase the dynamic nature of digital artifacts.

When digital technology came about, it first started out as digital technology being applied to non-digital artifacts, meaning an object which is man-made, in contrast to being a natural object (Simon, 1996). The process can be understood as digitizing and is a technical “process of converting analog signals into a digital form, and ultimately into binary digits (bits)” (Tilson

et al., 2010, p. 749). For example, digitizing the cow path is a term used to explain how digital technology did not change very much of the artefact, instead the digital technology applied to a non-digital artefact meant doing more of the same. For example, when the analog LPs went to digital CDs, listening to music were pretty much the same. A flexibility of digitizing later led to digitalization and the reshaping of social infrastructures. Digitalization, in contrast to digitizing, introduced a social aspect to digital technology and is “a sociotechnical process of applying digitizing techniques to broader social and institutional contexts that render digital technologies infrastructural” (ibid, p. 749). Here, social practices are in action in the creation and use of technology (Orlikowski & Scott, 2008; Pentland & Feldman, 2007). When actors use digital technology, they come with “institutionalized social practices and taken-for-granted technology infrastructures” (Yoo, 2013, p. 231). In this way, digital technology use go beyond digitizing and digitalization give it a dependency on social actors and practices in broader social contexts and institutions when it is used and designed.

There has long been an argument that digital technology is created and developed by the human actor. In IS research, the Structuration theory by Giddens has been used extensively to understand the social interplay between the human and technology. It was first deployed in the early 1970s and the theory has since then become heavily referred to in IS research (Jones & Karsten, 2008). The social interplay was further strengthened and developed in theory by Orlikowski, who introduce technology into Giddens theory of Structuration, as Giddens, according to Orlikowski, does not specifically include technology in explaining Structuration. The theory of Duality of Technology emphazise that technology is not an entity in itself, but is created and changed by human action. At the same time, structures exist among organizations who develop and/or use technology which mean that “Technology embodies and hence is an instantiation of some of the rules and resources constituting the structure of an organization” (Orlikowski, 1992, p. 405). The Duality of Technology therefore see technology as a product of human agency while it also acknowledges its structural properties (ibid). From this we can learn that technology can take different shapes and forms depending on the social context in which actors designing, implementing and using technology are embedded. At the same time, processes of design, implementation and use are enabled and constrained by the material characteristics of digital technology, rendering digitalization as an inherently complex sociotechnical process.

When we want to learn how digital technology can look different depending on context, digital innovation is a concept that grow out of digital technology. Digital innovation is a concept that can hold several meaningful elements. For example, when describing the development of digital technology, digital innovation can explain the progress of digital technology, perhaps as production of novel products by new combinations of digital and physical components (Yoo, Henfridsson & Lyytinen, 2010) or as something more than digital artefacts and instead as shaping professional conducts such as market offerings and business processes or models (Nambisan, Lyytinen, Majchrzak & Song, 2017). However, Skog (2019, p. 48) see a limitation with these descriptions and to be able to recognize other processes and outcomes of digital innovation, a fuller concept of digital innovation would go further and include a definition of digital innovation embedded in “wider sociotechnical environments to enable their diffusion, operation and use”. From this, three characteristics are recognized to

further understand digital technology, which have implications on how we view processes and outcomes of digital innovation. These dynamics are presented below.

To understand digital technology, three characteristics can be used. Digital technology can be re-programmable, self-referential and contain a Layered Modular Architecture (LMA). These characteristics of digital technology does in its turn help to shape characteristics of digital innovation as open-ended, distributed and combinatorial. (Skog, 2019). First, digital innovation can receive an *open-ended* character by digital technology (Henfridsson, Nandhakumar, Scarbrough & Panourgias, 2018). This can mean that value of digital innovation is viewed “not as fixed but as fluid over time” (ibid, p. 90). For example, the content layer in Google Map use APIs that can connect to layer modules of hardware, services or networks (Yoo et al., 2010). Second, digital innovation can be *distributed*. When things are distributed, it can mean a geographical dispersion of innovation activities (Yoo, Boland, Lyytinen, & Majchrzak, 2012). It can for example for firms mean using an organizing logic in a distributed network when producing products with a modular architecture (Yoo et al., 2010). Another example is how individuals and firms with different backgrounds and professions help design and implement apps to the iPhone (ibid). Third, digital innovation can have a *combinatorial* effect, leading to products and services joining hands. An example is when firms create new products or services by recombining digital artefacts or combine non-digital artefacts with digital capabilities. The product or service can remain incomplete and its boundary “unknowable” (Yoo et al., 2012, p. 1402), partly due to a layered architecture (Yoo et al., 2010). An example is the co-creation of new content in a community by building on each other’s contributions (Yoo et al., 2012). When we speak of digital innovation, certain characteristics could help us learn more about processes and outcomes of it.

In this chapter we have learnt that digitizing make artefacts digital, that digitalization give a socio-technical aspect to digital technology and that digital innovation hold certain characteristics which could mean digital technology taking different shapes and forms implicating processes and outcomes of digital innovation. Digital innovation become a process where both the process and the outcome are influenced by the ever-changing material properties of the technology (what a technology enables and does not do) and the social context within which the process and the outcome work. In the next chapter, the research methodology is presented on how data was collected and why to be able to answer the research questions.

3. Research methodology

This study took its departure from the limited and unclear knowledge available on e-petitions. To be able to respond to the aim, understand if and how e-petitions promote citizen influence and if the relationship between variations in citizen influence and e-petition design features affect the influence, two things must be investigated. At first, the citizen influence of e-petitions and secondly, the design. These two investigations build on a quantitative study. The subchapter Quantitative data collection and analytical methods describes the methods used in the quantitative research and explain how the legitimacy of data and results will be assessed.

3.1 Quantitative data collection and analytical methods

In a quantitative study one strives to explain the relationship between an independent and dependent variable and at best find causality, further understood as cause and effect (Bryman, 2012). In this study, two variables that illustrate this relationship is the influence and the design of the e-petition. The influence is the dependent variable and design the independent variable. Meaning, the design is the cause that could have an effect on the influence gained. This relationship builds the inference of the study and is further presented in chapter 3.1.4.

The two parts of the research question resulted in using one method, separated into several steps, to collect data to enable answering the research questions. The first revolved around to what extent e-petition implementations by Swedish municipalities promote citizen influence in political processes and the second asks what the relationship is between variations in citizen influence and e-petition design features.

3.1.1 Promoting influence

The method was laid out to enable answering the first part of the research question, to what extent e-petition implementations by Swedish municipalities promote citizen influence. A first stage was to learn how many municipalities in Sweden had implemented the e-petition. The target was to study the full population, meaning all of the municipalities who had implemented the e-petition of Sweden's 290 municipalities. At first the study sample was identified by sending an e-mail to all 290 Swedish municipalities asking if they had introduced the e-petition. See table 2. It was decided that the final case sample should be the municipalities who reported use of e-petitions and hereby a potential influence. An e-mail survey was considered an effective mean for data collection given the number of study objects. The e-mails were sent to the official addresses of the municipalities, which were obtained from SALAR (Swedish Association of Local Authorities and Regions), asking for the survey to be forwarded to the relevant respondent at the municipality. Many responded quickly and the answers came from people in different positions, such as registrars, administrators, communication officers, law, secretaries, and administrative directors. This study sample ended up with 41 municipalities, which then was believed to be the full population of municipalities working with e-petitions out of Sweden's 290 municipalities. Later two municipalities, Huddinge and Sölvesborg, were found to have the e-petition through google searches conducted. However, they weren't included because of the late stage of the study in which they were identified.

The first part of the research question was based on an investigation on what influence could mean. Influence is a popular word in politics, but also on views of e-democracy. Anttiroiko (2003, 123-125) see how institutional and technological mediation could transform the political system. When making "rule by the people" possible, institutional settings reach different kinds of democratic mechanisms, such as the representative systems, direct decision-making and participatory mechanisms. In the end, it is all about determining "the proper mix of mechanisms that meets the requirements of a new democracy". Concerning technological mediation, new ICT:s could reinvent the democratic agenda and is all about finding the added value of technology through democratic objectives and gains. In this study influence was understood when assessing the relevance of technology and by asking the question: "Are the e-democracy experiments or practices such that people involved may truly influence the issues

of interest?” In this regard, the method in this study involved finding out if e-petitions gave citizens an opportunity to “influence the issues of interest”. Following on this, it was required to understand what the influence was made up of when it came to the e-petition. This was an important endeavor because e-petitions have alternately been judged to be powerless, influential or even overly influential (SOU 2015: 96). Sweden’s second democracy report can teach us more about e-petition practices and expectations. The report sees a purpose with the e-petition of agenda setting, but also as something that can influence the general societal debate and doing a long-term opinion work. For these outcomes, the report state that a crucial factor is made up of the number of signatures required for the petition to be noticed and debated (ibid). Learning from Anttiroiko about the relevance of technology and influence of the e-petition from Sweden’s second Democracy Report, the signature threshold of the e-petition become important to study to grasp the influence.

A second step was to send another e-mail survey to get more in-depth knowledge and understanding about the influence and overall knowledge about the e-petition systems in the 41 municipalities. To be able to study the influence generated by the e-petition implementations, the questions asked how many e-petitions had been sent from citizens, the number of e-petitions reaching the signature threshold among municipalities and other questions of more general character. See table 2. These were: What year did your municipality introduce e-petitions? How many e-petitions have you received in total? How many e-petitions since the start have gained enough votes to be passed on within the municipality? How many approvals have been given to e-petitions that have achieved enough number of votes? These numbers from municipalities were put in an excel file, for organizing the data. This data came to include more data collected to answer the second research question, which is presented in the next section.

Table 2. Overview of data collection

| E-mail surveys | Questions | Number of e-mails sent | Positive feedback |
|-----------------------------|---|-------------------------------------|--|
| First e-mail survey | Have you implemented the e-petition? | Municipalities in Sweden: 290 | Municipalities with e-petitions: 41 |
| Second e-mail survey | What year did your municipality introduce e-petitions? - How many e-petitions have you received in total? - How many e-petitions since the start have gained enough votes to be | Municipalities with e-petitions: 41 | E-petitions with influence numbers: 34 |

| | | | |
|--|---|--|--|
| | <p>passed on within the municipality?</p> <p>- How many approvals have been given to e-petitions that have achieved enough number of votes?</p> | | |
|--|---|--|--|

3.1.2 Design features

The second part of the research question involved looking on the design features. Finding the design elements meant reviewing the e-petition sub-pages on the websites of the 41 municipalities found in the first e-mail survey. This involved viewing the functions and tools on e-petition system and their potential for influence. See Appendix 2.

In the search for tools and functions viewed as design, a guide was to find the “details in the construction” (SOU 2015:96, p. 567), which can be crucial for citizen participation and decision-making according to the research anthology of Sweden’s second Democracy Report. These were for example discussion fora, social media access, geographical maps and the signature threshold. Hurdles could be setting the right signature threshold which could, if set too high, reduce citizen’s motivation to participate. Another hurdle could be authentication, meaning having to register before participating (ibid) According to most researchers, institutional design is absolutely crucial to how many people participate and whether the systems can lead to effects on agendas and policy decisions (ibid). In this way, the methodology used an explorative character to be able to include different kinds and a plurality of designs.

This data was put in the excel file together with the data from the second e-mail survey.

3.1.3 Data analysis

The data can be found in Appendix 1 and show the number of e-petitions that have gone on to reach the signature threshold and the design features on the websites of these e-petition systems. To be able to study the influence in the first research question and the data in the second, the ranking from high influence too low influence among the 34 municipalities was split in half in the excel document, creating two groups. The municipalities in the upper end of the ranking was called the High influence group and municipalities in the lower end of the ranking was called the Low influence group. In these two groups, data was either presented as an average in each group or as number of implementations. It was done by summing the data in respective group, then dividing the elements studied with the number of municipalities in each group. This method was applied to answer the first part of the research question in chapter 3.1.1 and the second part of the research question in chapter 3.1.2. This method made it possible to study and compare the two groups.

3.1.4 Assessment of the rigor of the study

To get an understanding of the quality of the methods chosen and the research process, the rigor of the study will be assessed. In doing this, the validity and reliability will be searched for. The procedure can be described as looking for the legitimacy of the data and the results.

To start with, the validity and reliability is searched for. Three criteria were used to investigate the validity: Design-, measurement- and inferential validity. The design validity further involved internal- and external validity and measurement validity involved reliability and construct validity. (Venkatesh, Brown & Bala, 2013)

As earlier stated, *design validity* involves internal- and external validity. First, internal validity regards inferences about causal relationships between independent and dependent variables and if it is possible to rule out alternative explanations. In this study, a big sample was strived for to find completeness and diversity. There were four aspects of uncertainties that this study faced and those revolved around quality of data, finding design elements, timeframe of implementation and defining influence.

First, the quality of the results depend on the quality of the data provided by the municipalities, which may introduce some uncertainty regarding what exact conclusions can be drawn.

Second, the design elements of the digital artefact, the e-petition, is considered an independent variable, on which the number of e-petitions reaching the signature threshold, the influence, depends. To find the design of the e-petition systems will be a result of observation. This observation can partly be guided by Sweden's second Democracy Report, which states that e-petition systems significantly differ from one another in their details, such as technology use, access, response obligation, thresholds, authentication and organizational support and resources (SOU 2015:96). It is expected that these designs can be different if this study would be repeated, possibly due to the capabilities to observe more design features, but also because of change in processes of digital innovation.

Third, time, there could exist other explanations than the design which could give a false understanding of why certain e-petition systems in some municipalities generate more e-petitions that passes the signature threshold than other municipalities. Two factors not taken into account in this study are how many years e-petition systems have been implemented in municipalities and how big the population is. Let's expect that the longer e-petition systems have been implemented, the more e-petitions have been created and signed and the larger the population in a municipality, the more people exist who can create and sign e-petitions.

Fourth, influence will in this study be understood as e-petitions reaching the signature threshold. A more accurate definition of influence from the e-petition could be if they both reached the signature threshold and also received a positive feedback from authorities. Meaning if an e-petition was implemented. This is important as it more truly characterizes citizen's power over the agenda (SOU 2015:96). It is expected that investigating e-petitions with positive feedback in time could help us learn more about influence.

The second part of the *design validity*, external validity, asks if the results can be generalized to other settings and groups, or contexts. If the study shows a diversity of results the quantitative study may contribute a strength if identifying all municipalities with e-petitions, being able to generalize findings from this study. Lidén (2001) means that the big challenge is to reach generalizability, even if it's a demanding and time-consuming work it is nevertheless very desirable. It could in contrary be risky to study a small sample to understand the influence at a time when municipalities are starting to implement these digital tools independently. Samples could in such a case mean ending up with drastically different findings

and study results. Also, conducting a quantitative study, according to Grönlund (2001), help seeing the actual amount of participation, which would not be possible through a qualitative study. *Measurement validity* involves reliability and construct validity. Measurement validity want to understand how well an instrument measures what it purports to measure. The first part, reliability, measure the quality of measurement and a measure is reliable if it produces the same result over and over, meaning repeatability and consistency. The reliability can possibly be strengthened or question the results of this study, when future knowledge is gradually built following more municipalities introducing e-petitions over the years to come. While e-petitions have had a significant influence in political decision-making at some instances, in other cases they seem to have no real significance (SOU 2015:96). The data will keep developing and as there are many municipalities that has not yet introduced the e-petition, the results of this study most likely will have to be updated in the future. But by using a quantitative study like this, with sending out an e-mail survey and finding design features on websites, this study should be able to be repeated, however generating different results.

The second part of the *measurement validity*, construct validity, means the degree to which interferences exist by operationalization's in a study to the theoretical constructs on which the operationalization's are based. This thesis will include finding e-petitions reaching the signature threshold which according to Sweden's second Democracy Report state it is important for influence (see chapter 3.1.1), and finding design features which the same report state is crucial (see chapter 3.1.2).

In the end, *Inferential validity*, or statistical conclusion validity, looks on the statistics and if it has impacted the correlation between independent and dependent variables. From this, the opportunity to talk about the data used to rank data and results will be taken. Results will be ranked from the second e-mail survey; results in chapter 4.2 in columns and the results from the observations on municipal websites finding design features, presented in chapter 4.3, in rows. This will give a possibility to see how a municipality with certain design features may open up for influence as of e-petitions passing the threshold. Repeating the same method for all municipalities will then result in a ranking by sorting the column of the signature threshold numbers in the reporting of data. This ranking will be split in half, creating two groups, to be able to compare findings and in the end come to a conclusion whether certain design features result in a certain outcome, defined as the influence.

This chapter has investigated the rigor of the study, or the legitimacy of data collection and results. Some uncertainties existed concerning data collection and are opportunities for future studies to take notice of.

In the next chapter, analysis and results from this data will be presented.

4. Analysis and results

In this chapter, the results of the study are presented. Chapter 4.1 describes the e-petition, chapter 4.2 describes the promotion of influence and chapter 4.3 describes the digital technology use and design choices.

4.1 The e-petition

In this chapter, the empirical background of the e-petition is described. The e-petition will be introduced and how it is developing in a Swedish context.

The e-petition is in the digital era a tool that can be used for political purposes in government. It is a digital artefact that support participation by utilizing digital technologies (Bergholtz, Ekenberg, Hansson, Johannesson & Snygg). It enables people on government websites to create, sign, comment on and share an e-petition to attract more signatures with their own computer, smartphone or tablet. Participants can sign up to support or protest against an issue electronic lists (ibid). The e-petition can be described as influence attempts, which take place by the participants to the elected representatives brings up issues, demonstrating existing injustices or proposing concrete policy measures (SOU 2015: 96). If e-petitions are signed by a certain number of people, it indicates that the issue is of interest among a bigger group of people and the issue is therefore selected for further notice among authorities.

The e-petition is a digital version of an already established participatory tool for citizens, namely the petition. The petition is a tool for citizens to use paper and pen to collect signatures from citizens to be able to impact politics. If enough people have signed a petition, the authorities have to consider the issue and make a decision on it. The petition was used in England in 1215 when barons were given the right to submit complaints to the royal house without risking reprisals through Magna Charter, a treaty that meant that the king shared his power. It was also used successfully in the United States in the opposition to slavery, and in Sweden in 1913 for female (general) voting rights, where 350,000 signatures were collected in support of the bill on universal suffrage (SOU 2015:96). The petition is written in law in Sweden, for municipalities to be able to receive “folkinitiativ” (SFS 2017:725, chapter 8, 2§§) and open up for a referendum on the issue if it reaches signatures from 10% of the inhabitants in a municipalities and if the municipal council agrees on a referendum. In municipalities in Sweden from the year 2010-2018 received 102 petitions according to Statistics Sweden (Statistics Sweden). The petition still exists in government as of today, but has with the new information technology received a renaissance (SOU 2015:96).

The first country to use the e-petition is believed to be Scotland in 1999 (SOU 2016:5). UK was also early and started in 2006 an initiative to use Internet to develop citizen participation (SALAR, 2014). Many countries have since then introduced the e-petition on national level, some examples are UK, Germany, South Korea, USA, Finland, India, Norway, Russia, China, Scotland, and New Zealand (SOU 2016:5). An example at supra national level is the European Citizen Initiative (ECI). It exists on local-, regional-, national- and supra national level around the world and is according to Wright (2012, p. 453) “one of the most prominent and widely used e-democracy tools” and “exists in almost all European countries” (Adenskog, 2018, p. 34). But while the e-petition has spread largely on an international level, Sweden has in the case of the e-petition been late. The first municipality in Sweden to introduce the e-petition was Malmö in 2008, but Sweden does not have it implemented on national level like many other countries.

In recent years, an institutional pressure has appeared for the e-petition to be implemented. In 2016, Sweden’s second Democracy Report gave recommendations to implement and design

the e-petition, which among other things included a forcible introduction of the e-petition in all Sweden's 290 municipalities, while letting go of the citizen proposal (in Swedish called Medborgarförslag), and putting the signature threshold to 1%. This has however not occurred, instead municipalities are implementing them on their own.

This subchapter has taught us that the e-petition is open for citizen influence in political processes. It stems from the non-digital artefact the petition and with its digital form, the petition could receive a renaissance. But even if the e-petition is a highly used e-democratic tool around the world, Sweden has yet to introduce it, among other things on national level, but in recent years, an institutional pressure has come for all municipalities to implement it and as of now, municipalities are implementing the e-petition independently from another. In the next section, in the next sections, the promotion of influence of the e-petition and the relationship between variations in influence and design features will be explored, as well as assessing the rigor of the study.

4.2 Promoting influence

When understanding how the e-petition promote citizen influence, the passing of the signature threshold becomes significant, as explained in chapter 3.1.1. The second e-mail survey revealed that e-petitions from 34 municipalities, out of 42 in total, generated over 6 000 e-petitions being published on municipalities websites. Of those 6000 e-petitions, around 1200 e-petitions had passed the required signature threshold and of those, around 188 e-petitions in a total of 21 municipalities were implemented. This data gave general knowledge on the e-petition systems.

To in the end be able to draw conclusions about the data collected, as expressed in chapter 3.1.3, two ideal groups with different degrees of influence were created – a low influence group and a high influence group. The two groups each involved 17 municipalities but diverted from each other in the number of e-petitions being published on the municipal websites, how many e-petitions passed the signature threshold and how many e-petitions were implemented. Finding the average municipality of each group, further explained in chapter 3.1.3, showcase the results. An average municipality in the High influence group had received 302 e-petitions, of which 60 had passed the signature threshold and ten were implemented. In the Low influence group, an average municipality had received 49 e-petitions, out of which ten had passed the signature threshold and one was implemented. The result is shown in Table 3.

Table 3. Groups with high and low influence based on number of e-petitions published on the municipal websites, having passed the signature threshold and being implemented.

| E-PETITIONS | High influence group | Low influence group |
|----------------------|----------------------|---------------------|
| Published | 302 e-petitions | 49 e-petitions |
| Passed the threshold | 60 e-petitions | 10 e-petitions |
| Implemented | 10 e-petitions | 1 e-petition |

From the data collected, and approaching the first part of the research question, namely if e-petitions promote influence, we can learn that outcomes of the e-petition systems are varied.

In the subchapter below, digital technology and design choices are explored.

4.3 Digital technology use and design choice

As explained in chapter 3.1.2, design features were investigated on municipal websites. To be able to draw conclusions on their impact on influence, meaning e-petitions passing the signature threshold, differences between the high influence group and low influence group, seen in chapter 4.2, are searched for. In total, there were 11 design features chosen. These had a varying degree of use among the municipalities. See Appendix 1.

The data collected resulted in four designs, which to a relatively high degree were different between the two groups. In Table 4, the four technology use and design choices that were different between the two ideal groups are shown. These were the signature threshold, the timeframe, societal role and “Hot” subject. These are further explained below.

Signature threshold – The number of votes required for an e-petition to be qualified for selection by a municipality was very diverse among the 34 municipalities studied. The number of votes required ranged from 20 votes for the municipality of Västervik to 500 votes in the municipality of Värmdö. In-between, there were vote numbers of 25, 30, 40, 50, 60, 75, 77, 100, 200 and 220. In percentage form, the percentage of the number of people required to sign the e-petition for further due ranged from 0.1% to over 1% among municipalities. In the High influence group, an average municipality had a voting threshold of 0,14% while an average in the Low influence group was higher on 0,31%.

Timeframe – The time to cast a vote was set to days and ranged from 30 days up to a year among studied municipalities. The time frame for an e-petition to collect a certain number of votes differed quite a lot. Nineteen municipalities had a limit on 90 days, six had a limit on 60 days and three municipalities required the votes to be collected in 30 days. One exception was Bengtsfors with a time frame set to 120 days. An average municipality in the High influence group let users sign an e-petition in 76 days and an average municipality in the Low influence group let a user sign e-petitions in 85 days.

Societal role – When signing e-petitions, municipalities could require a user to be a registered citizen, or to be working or studying in the municipality. But municipalities could also leave the signature process completely open. In the high influence group, 11 municipalities left it open for all to vote on the e-petitions, irrespective of citizenship, being a student or employed. In the low influence group, 5 municipalities did the same. The number of municipalities allowing everyone to create and sign an e-petition were therefore relatively higher in the High influence group and relatively lower in the Low influence group.

“Hot” subjects – two municipalities, Malmö and Linköping, had chosen to use a design that showed issues that had gotten special attention through comments, shares and votes generated. The two municipalities used the symbol of a fire ball for a hot subject, “Hett ämne” in Swedish. These could be called popular or trending subjects. This was a unique feature to e-petitions and could help users find issues that received much attention engaging other users/citizens. In the High influence group two municipalities, in 1st and 4th place, used the design feature. In the Low influence group, no municipality did.

Table 4 Technology use and design features by municipalities and how they differ in terms of high and low influence

| DESIGN FEATURES | High influence group | Low influence group |
|------------------------|---|---------------------|
| Signature threshold | 0,14% | 0,31% |
| Timeframe | 76 days | 85 days |
| Societal role | 11 (open for all) | 5 (open for all) |
| “Hot” subjects | 2 (1 st and 4 th place) | 0 |

So far, 4 out of 11 technological features has been presented. The 8 that are left are used to a similar extent in the high and the low influence groups, see Table 5. This was the case of sharing icons for social media, where 11 municipalities used them in the High influence group and 13 in the Low influence group. 1 municipality in each group also marketed the e-petitions with their own Facebook page. The same was the case with requiring users to register when signing an e-petition, as 13 municipalities did so in the High influence group and 14 in the Low influence group. Using a progress bar on the overview page, to show how many signatures have come in and how many were left, were used by 2 municipalities in each group. 5 municipalities in the high influence group and 3 in the Low influence group gave the option to vote against the cause, meaning voting no. Other features that showed no difference in appearance were the age limit to sign an e-petition and making comments on the e-petition.

Table 5. Technology use and design features by municipalities and similarities in terms of high and low influence

| DESIGN FEATURES | High influence group | Low influence group | Total of 34 |
|----------------------------|----------------------|---------------------|-------------|
| No age limit | 16 | 17 | 33 |
| Comment option | 15 | 14 | 29 |
| Use of social media icons | 11 | 13 | 24 |
| User registration | 13 | 14 | 27 |
| Vote no | 5 | 3 | 8 |
| Progress bar | 2 | 2 | 4 |
| Marketing on Facebook page | 1 | 1 | 2 |

This chapter has showed that by putting the data material and sorting it in an excel file, the promotion of influence of the e-petition and the relationship between variations in citizen influence and e-petition design features could be studied. It was in this process possible to understand and discuss relationships, motivations, strengths, weaknesses, limitations and opportunities based on and working close to the data collected. Results showed that four design features to a higher extent were different between the two ideal groups than other design features – the signature threshold, the set timeframe, the requirement of citizenship, being a student or working and using the icon of a “hot subject”. The results showed that more influence was reached with a relatively lower signature threshold, when e-petitions are open beyond citizens, students and workers and if the icon “hot subject” was used. However, one

design feature, the set timeframe, diverted between the groups but did not give a clear indication of its function. While a longer timeframe could have brought about e-petitions receive signatures and achieve the signature threshold, the result did not showcase this. Instead, the e-petition systems in the low influence group allowed for e-petitions to be published longer than the e-petition systems in the high influence group. There also existed design features that differed among the 34 studied municipalities, but that didn't differ between the two ideal groups. This was more or less the case when applying no age limit, allowing a comment option, requiring users to register, using sharing icons of social media on the website, using the ability to vote no, a progress bar, marketing the e-petitions on a municipal Facebook page and using a thumbnail. This shows that design features vary to a high degree among municipalities who have implemented the e-petition and that some of them have implications on the citizen influence.

In the next section, the analysis and results will be discussed.

5. Discussion

This study investigated to what extent e-petition implementations by Swedish municipalities promote citizen influence in political processes and what the relationship between variations in citizen influence and e-petition design features is. The study was carried out because of the need to assess the relevance of technology in e-democracy and to know if people can truly influence issues of interest with the e-petition. This possibility could according to Sweden's second Democracy Report depend on features of the design. The relationship between promotion of influence and design features was investigated through a quantitative study by collecting data on influence and design features among 34 municipalities that had implemented the e-petition. Results showed that the relationship between influence of the e-petition and design features existed, to a higher extent among three design features of 11 studied. I now turn to discussing these results in relation to the existing literature and to provide advice to practice.

The e-petition can be understood as a digital tool that come without a standard form and that is implemented, designed and used differently in different social and institutional contexts. By using existing literature, we can learn the e-petition should be regarded as something beyond digitizing, which mean that the artefact is used in the same way, going from non-digital to digital (Tilson et al., 2010). Instead, a more complex situation of digitalization is appearing with social actors in institutional contexts interacting with the digital technology.

Going back to related research in chapter 2, the e-petition has in practice a chance to increase the role of e-democracy, particularly on local level in Sweden but also as an e-democratic tool in a world setting. This is encouraging as researchers have seen digital tools of e-service and e-government being predominant (Homburg, 2010; Liste & Sorensen, 2015; Sandoval-Almazan & Gil-Garcia, 2012). This also open up for IS research to investigate e-democracy (Belanger & Carter, 2012). Considering the resistance to e-democracy initiatives (Kristoffersson & Drott, 2010; Lindblad-Gidlund, 2010; Mahrer & Krimmer 2005; Grönlund, 2001), a question could be asked if social actors, such as politicians and government officials are viewing the e-democratic tool of the e-petition as something "non-threatening" to their

representative role. This entails that social actors could experience a shift in how they view the e-petition, but also their representative role. By applying a socio-technical understanding of technology (Tilson et al., 2010; Orlikowski & Scott, 2008; Pentland & Feldman, 2007; Yoo, 2013; Orlikowski, 1992), the new social interplay with the e-petition could imply new possibilities to study the e-petition, especially by acknowledging the dynamic nature of digital technology and characteristics of digital technology and digital innovation (Skog, 2019).

This study help municipalities who want to implement e-petitions know that design features could impact influence. Considering characteristics of digital innovation, organizational conduct could have unexpected consequences and should imply a need to be able to adapt to the fact that influence is affected by design features and the necessary organizational change it could bring.

Digital innovation become a process where both the process and the outcome are influenced by the ever-changing material properties of the technology and the social context within which the process and the outcome work. This is in the end generating an uncertainty regarding implementation, design and use of the e-petition which have an effect on the influence of the e-petition. Characteristics of digital innovation are open-ended, distributed and combinatorial, (Henfridsson et al., 2018; Yoo et al., 2010; Yoo et al., 2012) and could help us understand why the design of the e-petition is different among municipalities. In the particular context studied here, it was evident how these characteristics had rendered instances of e-petition implementations qualitatively different from each other. Given the open-ended character that digital innovation can hold, the e-petition implementations has resulted in variations in design features. While differences in design were seen between the two ideal groups, three of these design features were particularly helpful to explain variations in citizen influence. A second characteristic of digital innovation is that it is an inherently distributed process. Meaning, innovation agency can lie among several actors and not only one. In the end, not only one actor may decide how a digital artefact should look like. How the implementation of an e-petition in a municipality is looking could possibly help to teach us more about actors involved in the implementation, use and design. A third characteristic of digital innovation is an inherently combinatorial process. In this study, the design elements were 11 and some were used to a high extent while other were very limited in use. Design features could in this way be combined with the e-petition. In this sense, the concept of digitalization and understanding characteristics of digital innovation should be able to give more insight into how influence and design features are generated.

5.1 Limitations and suggestions for future studies

During this thesis work, data collection and analysis has meant exploring alternative data and explanations.

First, a limitation of this study was not being able to study the full population. Out the 41 municipalities that responded positive when asked if they had implemented the e-petition, 34 were studied due to limited data. But beyond this, 2 more municipalities were found on Google search. This was a result of not all municipalities answering the first e-mail survey.

Second, an interesting observation that I chose not to follow up on, but something that could be promising for future research, is to learn more about the software companies and the

products they sell to municipalities. From what I've learnt, five to six companies offer their products and services to the 34 municipalities studied, some of the companies having more of an holistic engagement where the e-petition is one of several products, and other companies delivering only the e-petition. Such a company could be one of several actors in a distributed network, together with municipalities, innovating the e-petition.

Third, this study has focused on the influence, as of the number of e-petitions that has passed the signature threshold. Learning from this study, a quantitative approach like this opens up for learning more about the role of the design for participation, which is also a focus in research as well as in Sweden's second Democracy Report. Also, influence could be further investigated by viewing influence as the percentage of e-petitions reaching the signature threshold out of the total published e-petitions in a specific municipality. In this way, influence could be narrowed down, without paying attention to the time that the e-petition implementation has existed.

Fourth, the e-petition stem from the non-digital artefact petition. At the same time, there is an expectation, expressed in Sweden's second Democracy Report, but also taking place in many municipalities, that the citizen proposal (Medborgarförslag) written in law (SFS 2017:725 chapter 5, 22 §§) will be shut down and replaced with the e-petition. The e-petition is therefore a digital technology that proceeds from two non-digital artefacts. How this change may affect the e-petition could be further explored. For example, some municipalities still call the e-petition citizen proposal. And one municipality, Staffanstorp, has implemented the e-petition halfway, requiring people to send in paper letters when signing the petition, 50 in a month instead of 50 mouse clicks. The transition from the citizen proposal (Medborgarförslag) to a new participatory tool could be done differently in different social and institutional contexts.

Fifth, this study has given unique insight into how certain municipalities implement, design and use the e-petition, reaching either a large influence while others reach less. Viewing this study on the basis of earlier IS research on digital tools in government, this study generate some new knowledge by focusing on local level and new units for participatory democracy (Belanger & Carter, 2012). The current sample size allows for targeting certain parts in future case studies, hitherto unexplored or needed to be understood more in-depth.

6. Conclusion

This study has generated new knowledge about the promotion of influence and the relationship between the influence and design features of the e-petition. It suggests that to fully understand the digital artefact of the e-petition, future research should investigate the digitalization of the e-petition and study the characteristics of digital innovation to be able to understand the social and institutional contexts better. If not understood, the consequences may be that organizations are unable to adapt to new circumstances.

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Appendix 1 – Data

| Groups/D Nr | Municipal Age | Citizenship | Vote threshold | Percentage | Timeframe | User registration | Social media | Comment | Vote no | Number of "Hot" suggestions | Progress | Thumbnail | Year introduced | Published | Passed | Implemented | | |
|-----------------------|---------------|---------------|-----------------------------|----------------|----------------|-------------------|--------------|------------|-----------|-----------------------------|-----------|-----------|-----------------|-----------|---------------|-------------|-------------|------------|
| | 1 Linköping | all | 100 | 0,06192 | 60 no | yes | yes | yes | no | 2 | yes | no | 2016 | 697 | 155 | 16 | | |
| | 2 Västerås | live or work | 100(152 74) | 0,065469 | 60 | | yes | yes | yes | 2 | no | no | 2014 | 225 | 124 | 48 | | |
| | 3 Göteborg | all | 200(573 85) | 0,034852 | 90 | yes | yes | yes | no | 3 | no | yes | 2017 | 640 | 111 | 21 | | |
| | 4 Malmö | all | 100(340 80) | 0,029343 | choice | web form | yes + self | yes | no | 1 | yes | no | 2008 | 1500 | 100 | uncertain | | |
| | 5 Norrtälje | all (reCap) | 25 | 0,040411 | 90 | no | no | no | no | 2 | no | no | 2018 | 185 | 81 | | | |
| | 6 Lund | all | 100(123 45) | 0,080975 | 60 | yes/e-leg | no | yes | no | 1 | no | no | 2017 | 400 | 77 | 7 | | |
| | 7 Karlstad | all | 50(92 804) | 0,053877 | 90 | yes | no | yes | no | 1 | no | no | 2016 | 290 | 52 | uncertain | | |
| | 8 Kävlinge | all | 100(31 536) | 0,317098 | 90 | yes | yes | yes | no | 2 | no | no | 2014 | 98 | 51 | 25 | | |
| | 9 Östersund | all | 35 | 0,039422 | 90 | yes | no | yes | no | no | no | no | 2015 | 363 | 43 | 4 | | |
| | 10 Gävle | ? ? | 50(101 728) | 0,049151 | 60 | yes | yes | yes | no | 1 | no | no | 2017 | 80 | 37 | uncertain | | |
| | 11 Oxelösund | all | 50(12 040) | 0,415282 | 90 | web form | yes | yes | no | 1 | no | no | 2016 | 110 | 31 | 5 | | |
| | 12 Svedala | all | 30(21 654) | 0,138543 | 90 | yes | yes | yes | yes | 2 | no | no | 2017 | 46 | 31 | 7 | | |
| | 13 Finspång | all | 30(21767) | 0,137823 | 90 | yes | no | yes | no | 5 | no | no | 2014 | 102 | 28 | 17 | | |
| | 14 Fagersta | all | 60(13 413) | 0,447327 | 90 | yes | yes | yes | no | 1 | no | no | 2016 | 85 | 25 | 12 | | |
| | 15 Hallstahar | all | 50(16 258) | 0,307541 | 60 | no | yes | yes | no | 3 | no | no | 2017 | 47 | 25 | uncertain | | |
| | 16 Tyresö | over 16 years | 50(48 196) | 0,103743 | 30 | yes | no | yes | yes | 1 | no | yes | 2017 | 143 | 24 | 6 | | |
| | 17 Strängnäs | all | 30(35 921) | 0,083517 | choice | yes | yes | no | no | 4 | no | no | 2014 | 122 | 22 | uncertain | | |
| High influence | | | 16 11 (open for all) | 0,14% | 76 days | | 13 | 11 | 15 | 3 | 32 | 2 | 2 | 1 | 2015,5 | 5133 | 1017 | 168 |
| | 18 Luleå | 18 years? | citizen | 77(77 838) | 0,098923 | 90 | yes/e-leg | yes | yes | no | 3 | no | 2018 | 211 | 20 | 0 | | |
| | 19 Värnamo | all | all | 30(34 442) | 0,087103 | up to 90 days | no | yes + self | yes | no | 2 | no | 2018 | 26 | 20 | uncertain | | |
| | 20 Söderham | all | municipal | 25(25 685) | 0,097333 | uncertain | web form | yes | yes | no | 2 | no | 2017 | 88 | 18 | 1 | | |
| | 21 Västervik | all | all | 20(36 659) | 0,054557 | 30-90 days | e-petition | no | no | 3 | no | no | 2018 | 55 | 17 | uncertain | | |
| | 22 Bengtsfor | all | all | 30(9804) | 0,305998 | 120 | yes/citizen | yes | yes | no | 1 | no | 2012 | 32 | 14 | uncertain | | |
| | 23 Svenljung | all | citizenship | 30(10 713) | 0,280034 | uncertain | web form | no | yes | no | 2 | no | 2017 | 24 | 14 | 6 | | |
| | 24 Karlskoga | all | citizen | 50(30 383) | 0,164566 | 90 | yes | no | yes | no | 2 | no | 2019 | 18 | 12 | too early | | |
| | 25 Alvesta | all | all | 30(20102) | 0,149239 | 90 | no | yes | yes | yes | 1 | no | 2018 | 40 | 11 | too early | | |
| | 26 Burlöv | all | all | 100(18449) | 0,542035 | 90 | yes/citizen | yes | yes | no | 3 | no | 2013 | 25 | 11 | 5 | | |
| | 27 Trelleborg | yes? | citizenship | (44 992) 50 | 0,111131 | 30 | yes | yes | no | no | 2 | no | 2018 | 46 | 9 | | | |
| | 28 Eslöv | all | citizen or | 100(33677) | 0,296939 | 90 | yes | no | yes | no | 3 | no | 2016 | 39 | 5 | uncertain | | |
| | 29 Helsingbo | all | citizenship | 100(145 96) | 0,068508 | 90 | yes/bank- | yes | yes | no | 1 | no | 2018 | 83 | 4 | 0 | | |
| | 30 Kristineha | all | all (but on | 50(24 317) | 0,205617 | 60 | yes | yes | yes | yes | 1 | no | 2018 | 50 | 4 | 3 | | |
| | 31 Söderköpi | all | all | 40(14 647) | 0,273093 | 90 | yes | yes | yes | no | 1 | no | 2014 | 22 | 4 | 2 | | |
| | 32 Knivsta | all | Citizenship | 100(18 792) | 0,532141 | 90 | yes | yes | yes | no | 2 | no | 2019 | 35 | 3 | too early | | |
| | 33 Östhamm | all | all | 1%(220 people) | 0,996422 | up to 6 months | no | web form | yes | yes | no | no | 2017 | 6 | 2 | 0 | | |
| | 34 Värmdö | ? ? | 500(44 471) | 1,124328 | up to 6 months | web form | yes | yes | no | 2 | no | no | 2014 | 28 | 1 | 1 | | |
| Low Influence | | | 17 5 (open for all) | 0,31% | 85 days | | 14 | 13 | 14 | 2 | 34 | 0 | 2 | 1 | 2016,7 | 828 | 169 | 18 |

Appendix 2 – Design features and their potential impact

| Design feature | Description | Potential impact |
|---|---|---|
| <i>Signature threshold</i> | The number of votes required for an e-petition to be qualified for selection by a municipality. | If the signature threshold is high, it runs the risk of limiting the number of e-petitions reaching the threshold. |
| <i>Timeframe</i> | The time an e-petition is up on a municipal website to collect a certain number of votes. | A long time give increase the possibilities to gather signatures, a shorter time could decrease this. |
| <i>Societal role (citizenship/student/worker)</i> | When signing e-petitions, municipalities could require a user to be a registered citizen, or to be working or studying in the municipality. | Allowing for tourists and other visitors to take part could increase the inflow of e-petition. Also, the technical boundary is not there. |
| <i>“Hot” subject</i> | Trending or popular subjects receiving many likes, comments and shares, showed with a fire ball icon next to an e-petition. | When users get notice of trending/popular e-petitions, the likelihood to engage could increase. |
| <i>Social media icons</i> | Twitter and Facebook icons for sharing e-petitions. | Users can gather signatures by sharing the e-petition on social media. Social media icons could increase this possibility for users. |
| <i>Marketing on Facebook</i> | Municipalities marketing the e-petitions on their own Facebook page. | A municipal Facebook page could increase the likelihood for e-petition to be spread on Facebook. |
| <i>User registration:</i> | Users required to register with Bank-ID, e-mail or others mean when creating or signing an e-petition. | A user registration form mean a technical hurdle to the using the e-petition for citizens. |
| <i>Progress bar:</i> | A progress bar on the overview page showing how many signatures that an e-petition has received and how many are still required to achieve the signature threshold. | By visualising the signature count, users be helped to learn about the status of an e-petition and how many more signatures are needed. |
| <i>Vote no:</i> | The option to vote no to, or against, the cause. | The ability to “vote no” could decrease the number of e-petitions reaching the signature threshold. |
| <i>Age limit</i> | An age limit to create and sign an e-petition. | Allowing for people under 18 years of age to take part could generate more e-petitions being created and signed. |
| <i>Comment option</i> | The option to make comments on the e-petition. | Giving user the ability to comment on e-petitions mean user generating content and discussing the issues of interest. |