

Why Do Innovations Fail? Lessons Learned from a Digital Democratic Innovation

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Abstract: Democratic innovations are brought forward by political scientists as a response to worrying democratic deficits. This paper aims to evaluate the design, process, and outcome of digital democratic innovations. We study a mobile application for following local politics. Data is collected using three online surveys with different groups, and a workshop with young citizens. The results show that the app did not fully meet the democratic ideal of inclusiveness at the process stage, especially in reaching young people. However, the user groups that had used the app reported positive democratic effects.

Keywords: Civic tech, democratic innovation, mobile application, evaluation

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1. Introduction

All over the world, governments, municipalities, researchers, non-governmental organizations, and start-ups are developing and experimenting with digital democratic innovations that might enhance political participation and strengthen democracy (Gilman & Peixoto, 2019; Wright, 2012, p. 453). Democratic innovations, “designed specifically to increase and deepen citizen participation in the political decision-making process” (Smith, 2009, p. 1), have been brought forward by political scientists and practitioners as a response to worrying democratic deficits.

Previous research has focused mainly on face-to-face forms of democratic innovations, such as deliberative mini-publics or citizen juries, but digital innovations might require other forms of evaluation, both practically and conceptually, since “we are still a long way from understanding the shifts that digital brings to citizen participation” (Smith 2019b, p. 578). This paper relates to a larger

literature about evaluating democratic innovations. More specifically, it analyzes a digital democratic innovation, a form that is less analyzed than face-to-face innovations (Damjanovic, 2019, p. 111). This inquiry might reduce the lack of empirically grounded knowledge about practices and experiences concerning digital democratic innovations (Merkel, 2019, p. 63). We aim to widen the discussion about how to evaluate digital democratic innovations, mainly by including the bottom-up viewpoints of the end-users in addition to the top-down views of the researchers in the evaluation of digital democratic innovations. The theoretical contribution lies in the attempt to elaborate on the evaluation of digital democratic innovations by analyzing a broader range of criteria than those originating from democratic theory. We address the following research question: How can we evaluate the design, process, and outcome phases of a digital democratic innovation?

The widespread use of diverse types of democratic innovations is certainly relevant to help deal with problems as declining political trust and voter turnout, yet in the scientific reporting of these innovations, there is a positivity bias (Spada & Ryan, 2017). When analyzing empirical studies, Spada and Ryan (2017, p. 772) found that only 4% of the investigated initiatives were reported as failures, and overall, the use of democratic innovations was portrayed as a best practice. Moreover, articles emphasizing challenges and failures are not published in top-ranking journals (Spada & Ryan, 2017), although many digital democratic innovations fail (Sifry, 2019; Rauschenbach, 2019; Tauberer, 2015).

“Exemplary cases of democratic innovations spark our imagination and offer succour to those of us who wish to see the empowerment of citizens through the development of a more participatory and deliberative politics. But we cannot generalise from these relatively rare cases of empowered participatory governance – too often public participation is ill conceived, poorly organised and lacking in meaningful support from elected and appointed officials.” (Smith, 2019a, p. 104)

We agree with Smith (2019a) in suggesting that researchers should learn lessons from democratic innovation cases that are not exemplary. The positivity bias is problematic since it can paint a false picture of the field of democratic innovations. Learning from failures is essential to avoid repeating mistakes made by others in democratic innovation design. Moreover, if taking part in or using a democratic innovation causes frustration among citizens, this can have negative long-term effects on their political attitudes (Fernández-Martínez, García-Espín & Jiménez-Sánchez, 2020) since it is plausible that citizens make broader inferences of the political system based on their assessment of democratic innovations (Karlsson, Åström & Adenskog, 2021, p. 114). Critics point out that the failures of democratic innovations may be due to a lack of citizen interest (Newton, 2012).

The practical contribution is to provide readers with experiences in the form of a case study of an implementation of a digital democratic innovation in a small municipality in Finland by analyzing the reception of a mobile application among its main target groups: municipal employees, politicians, and (younger) citizens. We created a digital democratic innovation in the form of a mobile application called Pocket Democracy (Berg, Lindholm & Högväg, 2021; Lindholm & Berg, 2019). Using user-centered design, we aimed to create an application that fulfills democratic goods such as transparency and inclusion (see Smith, 2009). The basic idea of the mobile app is to present information about municipal decision-making in a user-friendly manner. Doing so, the application represents an attempt at improving communication between local governments and citizens and can be

labeled a digital democratic innovation. Moreover, the use of open data (e.g., municipal protocols, meeting agendas) in the app entails that it can be regarded as a form of civic technology (Wilson & Charkraborty, 2019, p. 2). This paper reports on the implementation of the first versions of the app. The paper functions as a case study of the implementation of a digital democratic innovation in a municipality and the challenges of doing so successfully. Similarly to Damnjanovic (2019), the paper seeks to identify important factors affecting the evaluation of digital democratic innovations. The rest of the paper is structured as follows: the theoretical section discusses previous attempts at evaluating democratic innovations and presents a framework focusing on the design, process, and outcome evaluation. Data, methods and results from four studies are presented and discussed in relation to the proposed framework for evaluating digital democratic innovations.

2. Digital democratic innovations

Democratic innovations are “institutions designed specifically to increase and deepen the participation of citizens in the political decisions that affect their lives” (Smith, 2019a, p. 6). In this paper, we are interested in digital forms of democratic innovations, that is, technological tools for making democracy more inclusive, government more accountable, and representatives more responsive (Pogrebinschi, 2017). Digital democratic innovations (DDIs) can take either purely online or hybrid (online and face-to-face) forms (Smith, 2019c, p. 95). Pogrebinschi (2017) argues that the real change in how democracy works comes from entirely new means of e-participation, digital democratic innovations, rather than digital versions of traditional forms of political participation (e.g., e-voting, e-petitions). Innovations using open data to increase the transparency of decision-making may change how governments rule by making them more accountable (Pogrebinschi, 2017, p. 2).

The features of DDIs vary and may differ from face-to-face innovations. DDIs encompass, for instance, synchronous or asynchronous participation, the possibility of anonymous participation, or the use of different platforms such as existing ones (e.g., Facebook) or newly designed assemblages (Smith 2019b, p. 578). As Smith (2019b, p. 578) argues, digital innovations may disrupt the categories of analysis derived from face-to-face forms of engagement, as their particularities might be qualitatively different from offline forms. Scholars should reach out to findings from related areas such as civic technology to better understand these new digital forms of innovations according to Smith.

There are concepts similar to digital democratic innovation, such as “e-democracy, e-government, e-collaboration, open government” (Gilman & Peixoto, 2019, p. 105), but perhaps the closest term describing a related concept is “civic technology”. The definitions of civic technology brought forward are on the one hand broader, such as “the use of technology for public good” (Sifry et al., 2016, in Graeff, 2018, p. 24), “the usage of information and communication technologies to benefit citizens” (Zhang et al., 2022) or “technology that is explicitly designed and leveraged to increase and deepen democratic participation” (Gilman & Peixoto, 2019, p. 106). And on the other hand, more narrow definitions focus on civic technology as “an emerging field that typically leverages open data and sometimes open-source software to address challenges that may be invisible or neglected by government in a collaborative, problem-oriented way” (Wilson & Charkraborty, 2019). Civic technology focuses on helping citizens to participate more actively in a democratic society (May & Ross, 2017),

hence, there is a democratic dimension of civic technology, even though many civic technology initiatives fail (Rauschenbach, 2019).

In this paper, we view (and use) the concepts of civic technology and digital democratic innovations as being synonymous in many aspects, since they are both based on digital or technological solutions to societal problems. Nevertheless, the term digital democratic innovation is narrower and has a starting point in democratic theory and political participation (e.g., Smith, 2009), while civic technology might offer new tools and processes that might differ from traditional forms of democratic governance (Gilman & Peixoto, 2019).

3. Evaluating digital democratic innovations

Traditionally within the theory of democratic innovations, different types of democratic goods, such as inclusiveness, popular control, considered judgment, and transparency, are part of the normative background (Smith, 2009). Similar concepts can be used to analyze the democratic potential of civic technology applications. A framework by Jäske and Ertiö (2019) emphasizes six criteria: inclusiveness, deliberation, influence, publicity, mobilization, and knowledge production. In this framework, the researchers assess how well an application fulfills the criteria, similarly to a study identifying failures or successes (Spada & Ryan, 2017). However, one key area for future research in civic technology is how to measure the impact of both processes and technology, and how to engage citizens' preferences into account (Gilman & Peixoto, 2019, p. 114). Hence, we argue that researchers should include a design perspective as well as the concept of usability when discussing digital innovations. Usability is “the capability in human functional terms to be used easily and effectively by the specified range of users, given specified training and user support, to fulfill the specified range of tasks, within the specified range of environmental scenarios” (Schakel, 2009, p. 340). This means that usability is about identifying a specific user group and making sure that a tool can be used with ease and that the use is effective for performing certain tasks, which is relevant regarding the democratic potential of digital democratic innovations. In this chapter, we present previous attempts to evaluate digital democratic innovations and sort them into an overall model of evaluation.

3.1. Failure and success in digital democratic innovations

“Failure in tech is not unusual. As inventor Thomas Edison famously said about all his efforts to develop a storage battery, “I have not failed, I’ve just found 10,000 ways that won’t work.” (Sifry, 2019, para.7)

The evaluation of innovations can be done from different perspectives. At the technological level, the failure of digital information systems (IS) has been extensively studied within the field of user-centered design or similar scholars. The concept of IS failure is separated into two categories, system failure due to inability to perform the user’s wishes, and failure of producers to put together a working system (Dueñas-Cid et al., 2020). Hence, failure is connected to dissatisfaction with the

system from some of the actors involved in the interplay between context, innovation process, and support (Sauer 1993).

Moreover, within the research field of civic technology, the evaluation process has been separated into three different categories: (1) design evaluation, (2) process evaluation, and (3) outcome evaluation (Nam, 2012). In this model, the design evaluation refers to sociotechnical, functional, procedural, and policy design. The design evaluation considers both technical usability problems, as well as the aim of the innovation. Process evaluation refers to the democratic goals of transparency, participation, and collaboration in terms of, for example, inclusiveness, representativeness, and communication (Nam, 2012, p. 17–18). Outcome evaluation relates to effectiveness and impact, whether the targeted problems are solved and the goals and aims of the innovations are reached.

Similarly, in the field of democratic innovations, the assessment of these has been discussed. Although there is no consensus on the yardsticks for evaluation, Geissel (2012) identifies the key criteria: (1) input and legitimacy, (2) throughput and process, (3) output and effectiveness, and (4) democratic education and civic skills. Hence, the outcome evaluation can be broader than just the effectiveness and impact of an innovation and includes factors such as citizens learning more about a subject or developing civic skills and political interest. Attempts to measure the effectiveness and impact of civic technologies and democratic innovations often focus on some aspects of these categories.

3.2. Empirical research on success and failure

In a study of three micro-cases defined as democratic innovations, Damjanović (2019) assesses the success according to the reach of the innovations, for instance, by analyzing how many citizens use innovations and if they mobilize previous inactive groups. A similar discussion, emphasized by Smith (2019c), questions how participation in democratic innovations may reinforce existing social and economic power structures in society. Political scientists worry that innovations could be misused or abused by public authorities, causing problems for the political process (Smith, 2019c). If public authorities “impose their own agenda, manipulate funding, restrict participation to their supporters, or seek only electoral reward”, innovations can be misused (Pogrebinski, 2018, p. 837). Another problem emanates if authorities use democratic innovations as pure window dressing rather than as institutions that genuinely involve citizens in decision-making (Adenskog, 2018, p. 26)

The success and failure of democratic innovations are intricately linked to participation in the political process. Especially if democratic innovations are designed to include the citizens in the core functions of democracy, such as agenda-setting or will-formation. The success of such democratic innovations relies on developing a connection between the different actors, getting them to communicate, and ensuring participation from all relevant organizations (Dean, Boswell & Smith 2020). Frustration based on participation in democratic innovations can have long-term effects on participants' political attitudes (Fernández-Martínez, García-Espín & Jiménez-Sánchez, 2020). Successful projects often have low-barrier technology, are easy to use, and use data from trusted sources, such as established institutions (Hamm et al., 2021).

When analyzing two successful civic technologies, Hamm et al. (2021) found two aspects that contribute to success. Firstly, that technology attracts new community members. In the cases analyzed, the founders had organized events for students and participated in cultural and business meetings (Hamm et al., 2021). Secondly, that the issue the civic tech targets is of public concern (Hamm et al., 2021). The results of Damnjanović (2019) highlight how failures of democratic innovations in the Serbian case were due to the technical design of the products and not taking specific target groups into account (i.e., participants with previously low rates of political participation). Inappropriate design choices can be the result of focusing on participatory fashions rather than the task at hand. According to Smith (2019c, p. 14): “Assuming that a single participatory design can deal with a range of different tasks may overload and confuse participants or open up opportunities for manipulation as different tasks are played off against each other”. A study (Duenas-Cid et al., 2020) focusing on electronic voting systems development uses Sauer’s (1993) model to explain the failure of the internet voting system on the Åland Islands in Finland. In this study, the evaluation departs from four dimensions: the technological, the legal, the political, and the social dimension (Duenas-Cid et al., 2020). In the Åland example, the problem was mainly the interaction within the project organization, causing a delay in crucial time schedules, namely a process failure (Nam, 2012). Another study found that the system failure of the e-participation system was due to the problems of creating a meaningful connection between stakeholders (Toots, 2019).

When designing democratic innovations, the tasks for participants need to be clear as “one of the downfalls of democratic innovations is the failure to clarify tasks effectively or to try to deal with too many tasks within the same participatory space” (Smith, 2019c, p. 14). Another significant factor that has been identified in previous research is the failure to market the product and get enough publicity (Smith 2009) or not receiving enough funding for the project (Stempeck & Sifry, 2018). One of the conclusions by Smith (2009) is that elite actors and media are not paying attention to the innovations and do not bring public awareness to the question at hand. Hence, it may not be enough for researchers and NGOs developing digital democratic innovations to count on publicity from traditional sources. In conclusion, civic technologies sometimes fail because these technologies are not designed to endure, with no consideration of long-term plans (Stempeck & Sifry, 2018; Hamm et al., 2021). In addition, for success, the ability to change context and evolve from the initial product is important for long-term technology (Hamm et al., 2021), since being able to respond to users’ needs and wishes is important. Similarly, in a scan of more than 100 failed civic tech start-ups, the top reason given for failing, visible in almost half of the cases, was “no market need” (Sifry, 2019, para.7), hence, failing to address an important public issue.

3.3. A proposed framework for evaluating digital democratic innovations

As a summary of the theoretical discussion, we depart from the framework presented by Nam (2012) and separate the evaluation process into three different categories: (1) design evaluation, (2) process evaluation, and (3) outcome evaluation, and from the conclusion by Gilman & Peixoto (2019) that the evaluation of civic technology should include democratic indicators in both processes and in technology. Previous research is placed within the three categories, and the original framework (Nam, 2012) is therefore broadened (Table 1). The design evaluation of a digital innovation can study the usability problems or technical problems of an application, but it can also derive from not

meeting the needs of the users. The process evaluation is separated into democratic values and market economy values since previous research indicates the importance of the latter besides the former. If citizens do not know about a DDI, this is indeed a problem. The outcome evaluation can be about the effectiveness of a DDI, but also about more broad societal outcomes such as civic learning.

Table 1. Evaluating digital democratic innovations.

Design evaluation	Process evaluation		Outcome evaluation
Functional design (Nam, 2012; Hamm et al., 2021): usability problems.	<i>Democratic values</i>	Transparency, openness (Nam, 2012).	Civic learning (Geissel, 2012). Negative attitudes among citizens.
Procedural design (Nam, 2012; Sifry, 2019): Does not meet the needs of the citizens or fit into the democratic process.		Participation (Nam, 2012): problems related to democratic ideals such as inclusiveness, representativeness, diversity, deliberation.	Misuse and abuse by public authorities (Smith 2019c).
Failure to clarify tasks, or too many tasks (Smith, 2019c).	<i>Market-economy</i>	Marketing (Smith, 2009): not sufficient knowledge of the product.	Reinforce existing power structures (Smith 2019c).
Sociotechnical design (Nam, 2012).		Economy (Stempeck & Sifry, 2018; Hamm et al., 2021): not enough funding for the project.	Effectiveness (Nam 2012).
Policy design (Nam, 2012).			Impact (Nam 2012).

In conclusion, most of these evaluations are relevant for all types of democratic innovations, not just digital versions, such as meeting democratic goods. Others are more strongly connected to designing a digital product, such as usability problems and technical aspects of the process. We do not suggest that an evaluation needs to consider every box in this table, but that the evaluation of digital democratic innovations should consider addressing all three categories in some way.

4. Methods & material

This study uses four different data sets to evaluate the three dimensions of digital democratic innovations: design, process, and outcome. We test this evaluation framework in a case study on the development and implementation of a mobile application that aims to present information about municipal decision-making in a user-friendly manner. The application visualizes municipal

documents and lets the user personalize a feed of relevant information (e.g., decisions made by the municipal council). Hence, the app is related to the democratic ideal of knowledge production (Jäske & Ertiö, 2019). This study does not focus on an extensive design evaluation of the application since the design process has been described elsewhere (Lindholm & Berg, 2019; Berg, Lindholm & Högväg, 2021).

The design evaluation is based on an in-depth workshop with a group of 29 students from an upper secondary school. The workshop took place for one week in February 2020. The researchers presented the app in an introductory lecture at the beginning of the week and gave the students tasks to work together on in small groups during the rest of the week. The tasks included 1) identifying challenges in the current communication between the municipality and young people, and possible solutions to these challenges. The second task, 2) focused on the app in question and the students were asked to use the app for one week to identify problems and challenges in the app from the perspective of young users. At the end of the week, the groups held presentations for the researchers and teachers about their solutions for making young people more interested in the app as well as local politics in general. They also handed in a document about their work. The oral and written presentations were analyzed by the researchers using an inductive thematic analysis to identify broader themes to the questions asked (Braun & Clarke 2006). "A theme captures something important about the data in relation to the research question and represents some level of patterned response or meaning within the data set" (Braun & Clarke, 2006, p. 82). The analysis was done following the six phases proposed by Braun & Clarke (2006): 1) Familiarizing yourself with your data, 2) Generating initial codes, 3) Searching for themes, 4) Reviewing themes, 5) Defining and naming themes, and 6) Producing the report.

The process evaluation is based on data from the same workshop, together with a survey about the awareness and use of the mobile application that was distributed by e-mail to all students (N = 92, age = 16-19) in the local upper secondary school. The small municipality (population circa 5500) where the application was tested only has one upper secondary school, which means that the survey reached a large share of the persons aged 16-19 living in the municipality. The questions included in the survey focused on respondents' demographics, awareness of the app, political interest, use of the app as well as current forms of obtaining knowledge about municipal issues.

Moreover, the process evaluation is analyzed through two additional user surveys, targeting local politicians, municipal employees, and the general public. The main reason for this was to find out who (what types of people) had used the app and how. We were interested in the effectiveness of our marketing, that is, how well-known the app was among user groups. Additionally, we wanted feedback about the app's functionality and bugs. In short, we were interested in the reception of the app among end-users. The process evaluation was based on evaluating democratic values such as inclusiveness, but also market economy values such as marketing.

The outcome evaluation is based on the same two user surveys since both studies included questions on the effects of app usage on political knowledge and trust in local decision-makers.

We distributed the first user survey via the municipal e-mail lists reaching all employees (N=500) and decision-makers (N=120) in the municipality. At this time, the app only included data from this

municipality. To reach the general public, we distributed the survey on the municipality's official social media accounts (Facebook, Instagram) and ran a story featuring a link to the survey in the info section of the official municipal magazine. We also had a link to the online survey on the Pocket Democracy projects' social media accounts (Facebook, Instagram). A link was also sent to the 30 people (citizens, municipal employees/politicians) that took part in the focus groups in the planning phase of the application (reported in Lindholm & Berg, 2019). Four gift cards (worth 25 euros a piece) were used as incentives and winners were determined by lot. In total, we received 84 responses in one month: May 28th to June 30th, 2020. Unfortunately, we are not able to calculate an exact response rate for the survey since we do not know how many people saw the survey in total due to the distribution method (which we chose for economic reasons). Therefore, our sample is not representative of the general population. This is not necessarily a problem since the main idea of the survey was to discover what users thought about the app. Distributing a survey to a representative sample of the population in the municipality would not make sense economically since it was plausible that most people had not heard of the app and therefore could not tell us anything about how it works. By focusing on municipal employees, politicians, and public officials, we tried to increase the chance that we would get responses from people that have used the app.

The second user survey was distributed in June 2021, through a notification in the app and an e-mail reminder to registered app users (features not available at the time of the first user survey). At this time, the app included data from 12 different municipalities and had around 300 users. The response rate was around 22% (N = 67) and the survey was open for one month. The majority of the respondents, 73% (n = 49) were not working for a municipality and 56 % (n = 38) were female. The same questions concerning the effects of app usage were included in this second survey. Three gift cards (worth 25 euros a piece) were used as incentives and winners were determined by lot. The evaluation tools used in this article are summarized in Table 2.

Table 2. The evaluation process in this article.

Design evaluation	Process evaluation		Outcome evaluation
Does the app meet the needs of young citizens? What are the student's thoughts on the app design? (Workshop)	<i>Democratic values</i>	Participation: problems related to democratic ideals of inclusiveness, representativeness, diversity. Who used the application? Why has it failed to reach some groups? (Workshop, survey in upper secondary school, user survey 1)	Civic learning: increased interest and trust in politics, increased knowledge? (User survey 1 & 2)

	<i>Market-economy</i>	Marketing: how is marketing done today, does municipal information reach young citizens? (Workshop)	Impact: easier to follow local politics and contact politicians? (User survey 1 & 2)
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5. Results

5.1. Design evaluation

During a democracy-themed project week in the local upper secondary school, 29 students were divided into six groups that used the app and worked with different themes for one week. The themes centered around broader subjects, such as the students' current communication with their municipality, as well as more specific questions on problems with the app and suggestions for app development. Moreover, the students used the app for one week and were instructed to identify why the app had failed to reach young people (as shown in the survey reported below).

The problems identified by the students can be categorized into three themes: appearance, bureaucracy, and missing features. The appearance problems are different types of design failures, such as an unappealing design that does not spark interest for young users. Students commented that the colors of the app and the app logo were boring. Bureaucracy problems refer to both design and process failures, for example, that the app features texts that were too complicated or long. This can be seen as both a usability problem (i.e., how to visualize the long texts in an app format) and a general problem with bureaucratic texts in municipal documents. The language used in documents and the municipal decision-making process were hard to grasp for younger citizens.

Moreover, the young people identified several additional features that they wanted to include in the app. Some features were technical design aspects, such as notifications or react buttons. However, they would also like to be able to contact all politicians directly. This was only possible with politicians that had provided contact information to app designers in advance.

5.2. Process evaluation

The process evaluation is based on two online surveys and data from the workshop. Firstly, we present the results from the survey and the workshop in the upper secondary school. Secondly, we present results from an online survey directed to the app users.

The first survey was distributed in the local upper secondary school and had a response rate of 81.5% (n = 75). Of the respondents, 67% were female (n = 50) and 16–19 years old (M = 17.3). Most of the respondents, 75% (n = 56) lived in the municipality where the mobile application was tested.

43% of the students were quite or very interested in politics, and 16% had no interest at all in politics. Merely eight students (of 75, 10.7%) had heard about the app in question, and of these, only one had downloaded the app. This person had only used the app once when downloading it. Two people reported that members of their families had downloaded the app.

Since the survey identified that young people were not aware of the app, the in-depth workshop focused on identifying challenges for the inclusiveness of young people in municipal communication. None of the students in the workshop had used the app before, and the discussion centered on other forms of communication, mainly channels of communication and appearance/marketing.

One central theme in the workshops was that the municipality is not present in the channels young people use (e.g., Instagram and Snapchat). Instead, the municipality posts information on Facebook, through a local TV channel, and in an official municipal magazine. Since the young people are not on Facebook, do not watch the TV channel, and do not read the local newspaper or the municipal magazine because these are seen as boring and old-fashioned, students regarded these aspects as a major communication challenge between the municipality and young people.

"We currently do not receive any information about what is happening in the municipality, nor are we actively searching for it. The municipality could do a more active job of disseminating information before it is decided so that the residents have time to comment. The municipality could get an Instagram account, then the information would come up in our, young people's, and residents' feed, and the information would be easily accessible and easy to understand." (Group workshop in the upper secondary school)

Secondly, the students in the workshop thought that the current marketing done by the municipality is too boring and does not use modern marketing strategies. Moreover, they point to several usability problems with the municipality's website, making it difficult to find information.

"The website is the municipality's main information platform. For a non-accustomed visitor to the website, the website is not easy to navigate. Finding documents from council meetings or the like is difficult. The website should be easy to comprehend and find information on." (Group workshop in the upper secondary school)

The students were instructed to come up with solutions to the existing communication problems between the municipality and young people. Two strategies were emphasized during the workshops: marketing and inclusion. As a solution to the communication challenges, young people would prefer more information from the municipality on social media via, for example, a municipal Instagram account. They also called for better marketing strategies on social media.

Social media has an important marketing role in view of young people. It is more common for a young person to scroll through social media than to read a newspaper. (Group workshop in the upper secondary school)

Secondly, the workshop groups emphasized that young people want to be involved and be able to influence local politics. One way of improving understanding of, interest in, and communication about local politics would be to include this in the teaching in schools. The students would prefer

more courses in civics, election debates held in the school, guest lectures by young or celebrity politicians, and theme days and competitions.

"The youth would more easily become interested in municipal politics if e.g., the parties could take part in debates in front of students."

"In order to also attract young people to the municipality's activities, it could organize some kind of event to strengthen the youth's significance for the municipality." (Group workshop in the upper secondary school)

The second process evaluation was an online survey sent out to different user groups. Local decision-makers (members of the municipal council or other councils) constitute 28.5 percent of the sample, indicating that the survey seemed to interest politicians. The municipal council only has 27 members in total and eight of these (29.6%) answered the survey. Municipal employees are also well-represented (26.2%). The majority of respondents (54.7%) were in some manner directly connected to the municipality, while 44.0 percent in the sample were citizens. This is unsurprising, since the design of the application was a collaboration between the researchers and the municipality, making it more likely for municipal employees and decisionmakers to have heard about the project prior to the survey.

Women were in a clear majority among the respondents (77.4%). The average age of respondents was 41.4 years ($s = 14.1$), ranging from 17 to 74 ($M = 42$, $Mdn = 46$). The respondents were rather highly educated and about 56 percent had a tertiary or higher educational degree. Workers (44.6%) and intermediate level employees (15.7%) were the two most common occupational categories. Not a single unemployed person nor farmer answered the survey. Students constitute a rather large proportion of the sample (12.1%).

Among the 84 respondents, 27 (32.5%) did not know about the app. Knowledge about the app was highest among politicians, probably because we presented the app to the municipal council at the beginning of the design process. Unfortunately, citizens were least aware of the app, which is an indication of the lack of marketing. Citizens most probably had heard about the app via word of mouth or the local news media where there had been news stories about it within six months before the survey.

Of the 56 people who had heard about the app, only 23 (41.1%) had downloaded it. Municipal employees were the most enthusiastic group of downloaders while only two members of the municipal council had downloaded the app. Of the citizens that had heard of the app, only one third downloaded it. Thus, when analyzing the feedback regarding the app, one must keep in mind that it is based on the opinions of only 23 users. However, at the time of the survey, about 170 people¹ had downloaded the app, which means that we reached a substantial proportion (circa 13.5 %) of all users at the time. There were no statistically significant differences regarding age, education, occupation, role, sex, or political interest between users who had downloaded the app and those that had

¹ We do not have access to a more exact number. This is because the company that coded the application takes a fee for each time we demand download data and the project is now without funding.

not.² The survey was directed toward both those who had used the app and those who had not. By doing so, we can gain insight into the reasons for non-use. We asked those who had heard about the app but not downloaded it ($n = 33$) for their reasons behind not using it (Table 3). The main reasons were that users did not have a need for the app, that they simply had forgotten to download it, or that they had no interest in it. Some respondents did not know what the purpose of the app was. Technical issues for not downloading could be that their phone memory was full.

Table 3. Reasons for not downloading the app.

Reason for not downloading	n	%
No need for the app	11	28.2
Forgot to download the app	8	20.5
No interest in the app	7	17.9
Don't know what the app is for	5	12.8
Technical issue	4	10.3
Did not know it was possible to download the app	2	5.1
Other reason	2	5.1
Total	39	100.0

Respondents could choose more than one reason; therefore, the total (39) is larger than the number of respondents (33).

5.3. Outcome evaluation

The outcome evaluation is based on the two user surveys, where questions on the democratic effects of the app were included. The questions were related to civic learning and the effectiveness of the app from a democratic perspective. In general, users rated the app positively. The largest benefits of the app were related to easier access to information (Table 4). Users found that the app made it easier to follow issues and keep track of what was happening in the municipality. There were signs that the app could potentially increase political interest, knowledge, and participation. However, these data are self-reported, which means that there can be a social desirability bias in play (Krumpal, 2013). The app did not seem to make it easier to contact a decision-maker, nor did it increase trust in local politicians.

Table 4. The effects of app usage.

The app has...	User survey 1			User survey 2		
	M (s)	Mdn	n	M (s)	Mdn	n
Made it easier to follow what is happening in the municipality	4.1 (0.8)	4	23	4.1 (1.1)	4	64
Made it easier to follow an issue	4.4 (0.7)	5	23	4.1 (1.1)	4	64

² Differences between groups were tested with independent t-tests (age, political interest) and chi-square tests (education, occupation, role, sex).

Made it easier to follow the work of politicians	3.4 (1.0)	3	22	2.8 (1.5)	3	64
Made it easier to contact a decision maker	3.0 (1.1)	3	21	2.2 (1.5)	3	64
Has increased my interest in politics	3.5 (0.9)	3	22	3.3 (1.2)	3	64
Has increased my trust in local politicians	3.0 (0.9)	3	21	2.5 (1.2)	3	64
Has increased my knowledge about local politics	3.6 (0.8)	4	23	3.5 (1.3)	4	64
Has made me more eager to participate politically	3.4 (0.8)	3	22	2.7 (1.3)	3	64
The response alternatives were: 1. Completely disagree, 2. Somewhat disagree, 3. Neutral, 4. Somewhat agree, 5. Completely agree. The higher the mean score, the more respondents agreed with the statement.						

6. Discussion and conclusions

In this paper, we aim at widening the discussion about how to evaluate digital democratic innovations. The research question asked is: How can we evaluate the design, process, and outcome phases of a digital democratic innovation? We started by elaborating on the central criteria for evaluating digital democratic innovations, namely that evaluation can concern the design stage, the process stage, and the outcome stage (Nam, 2012; Geissel, 2012). As an addition to previous frameworks, we include marketing and long-term planning in our process evaluation. A central lesson learned here is that evaluations of digital democratic innovations need to consider all three stages and incorporate the end-users, otherwise the evaluation might miss end-users that struggle to use the innovation or simply do not know about it. A broader evaluation might help explain why some digital democratic innovations fail (see e.g., Sifry, 2019) and come up with solutions to problems that can be resolved in future updates.

Secondly, we highlight the issues that arose during the implementation of a digital democratic innovation in the form of a mobile application. In the empirical studies of this paper, we emphasize the inclusion of the end-users, in this case citizens, politicians, and municipal employees. The failures of the app identified in this study refer to design and process failures, while the outcome evaluation by the users of the app was positive and more successful. The design and process evaluation of the app were made through a workshop with upper secondary school students. Since a survey in the school showed that almost none of the students used the app in question, the democratic ideal of inclusion had not been met regarding young people. The students identified several design failures, based on how young people use the app, for instance, appearance features that made the app feel boring and the absence of key features such as notifications. Young people expected the Pocket Democracy app to work like other apps they use daily, such as Instagram or WhatsApp, which sets the bar high for app designers as these applications have a much higher budget than the app studied in this paper.

Resembling Damnjanović (2019), this digital democratic innovation failed to reach specific target groups, such as young people and their needs and wishes. The usability and attractiveness of an app is more complicated to achieve if there are several different user groups. In this study, the young

people were not impressed with the app, although previous usability evaluations of the app included young people and showed no problems (Berg, Lindholm & Högväg, 2021). Focusing on design and usability of a product is important, and designers should not include too many tasks in one app (Smith 2019c). In our experience, trying to design a mobile application that suits the needs of all user groups is challenging and sometimes impossible because groups might have conflicting demands. One solution might be to design different interfaces of the same app for different user groups.

Moreover, the app problems for young people were related to process features such as communicating municipal information to (young) citizens while using complicated and bureaucratic language. Hence, democratic goods such as transparency, openness, and inclusion (Smith 2009, Nam 2012), are not reached if the procedures for offline communication are simply replicated online. One lesson learned from this project is that a user-friendly design is not enough, since an original problem in this case related to the bureaucratic language used by the municipality. That is, technology can improve communication processes (e.g., accessibility to documents), but if the problems lie in content itself (e.g., language that is difficult to understand), citizens can still get frustrated.

The solutions proposed by the upper secondary school students focused on design and market-economy aspects. As highlighted by Smith (2009), a significant failure factor is to not market a product and get enough publicity for it. Other problems relate to researchers not receiving sufficient funding for the project nor considering long-term plans for the endurance of the digital solution (Stempeck & Sifry, 2018). Thus, offline democratic innovations usually require a one-off effort, while online tools require continuous maintenance and funding as users expect mobile apps to constantly be updated. When researchers apply for funding for digital democratic innovations, budget posts for continuous product development, marketing, and maintenance need to be included. In hindsight, a failure for the app in question was the marketing of the app (Stempeck & Sifry, 2018). No proper budget post had been set aside for this purpose. Thus, we suggest that when analyzing the process evaluation, it is important to consider market-economy aspects in the implementation process. Young people also called for more deliberative features of communication with the municipality and the politicians. Since interactive communication is a common feature of apps today, leaving this feature out can be experienced as a failure. However, creating a deliberative online space for citizens requires more resources (e.g., comment moderation) than simply including an open comment section.

The results from the outcome evaluation provide a more mixed picture, and the question of what the threshold for success is remains. The survey among the user groups showed that the app has succeeded in reaching several different user groups, such as municipal employees, politicians, and citizens. However, there were still relatively few users, and these were highly educated people, so the results are only tentative.

Among the respondents that had actively used the app, several positive effects were reported. The app made it easier to follow a municipal errand, and to keep track of what is happening in the municipality, which was the aim of the app. Furthermore, the app increased the (self-reported) knowledge of local politics, which can be evaluated as producing civic skills as an output (Geissel,

2012). Hence, future research should continue to evaluate the outcome of digital democratic innovations on a larger scale, and preferably by comparative work. The results from the evaluation process in this study can be found in Table 5.

Table 5. Summary of the evaluation results.

Design evaluation	Process evaluation		Outcome evaluation
Does the app meet the needs of young citizens? (Workshop) Results: Several failures identified.	<i>Democratic values</i>	Participation: problems related to democratic ideals of inclusiveness, representativeness, diversity. (Workshop, survey in upper secondary school, user survey 1) Results: Failure in reaching ideals such as inclusiveness.	Civic learning (user survey 1 & 2) Results: Success, increased knowledge of local politics.
	<i>Market-economy</i>	Marketing (Workshop) Results: Failure in reaching different groups such as young people.	Impact (user survey 1 & 2) Results: Success in keeping up with the municipal work.

We need to acknowledge some limitations in this study. First, our sample size of actual app users in the second survey was small and the data regarding outcomes (e.g., effects on political knowledge) were self-reported. Moreover, while we suggest that inadequate marketing is partly to blame for the low share of students that had heard of the app, our study design does not allow us to make causal inferences about the effectiveness of marketing. Also, the app is based on studies performed in Finland, which is a relatively small and well digitalized European country, and it is difficult to know how generalizable the results are. Nevertheless, the framework used in this study has no geographical limitations.

We want to conclude by emphasizing how scientific reporting about failures is important (Spada & Ryan, 2017). This is not only to provide a more accurate picture of the challenges and opportunities of digital democratic innovations, but to avoid similar mistakes in the future and thereby ensure that digital democratic innovations achieve their goals of improving democracy. One of the main lessons we have learned is that combining our roles as researchers with the intent of creating a democracy-supporting mobile application with the role as product developers on a market featuring global giants is challenging. Some of the challenges are to create a digital democratic innovation that fulfils democratic ideals, is user-friendly, attracts interest and fulfills the needs of several user groups.

References

- Berg, J., Lindholm, J., & Högväg, J. (2021). *How do we know that it works? Designing a digital democratic innovation with the help of user-centered design*. *Information Polity*, 26(3), 221–235.
- Braun, V. & Clarke, V. (2006). *Using thematic analysis in psychology*, *Qualitative Research in Psychology*, vol. 3, no. 2, pp. 77–101.
- Damnjanović, I. (2019). *Democratic innovations in Serbia: a misplaced trust in technology*. *Contemporary Politics*, 25(1), 111–127.
- Dean, R., Boswell, J., & Smith, G. (2020). *Designing democratic innovations as deliberative systems: The ambitious case of NHS citizen*. *Political Studies*, 68(3), 689–709.
- Duenas-Cid, D., Krivonosova, I., Serrano, R., Freire, M., & Krimmer, R. (2020). *Tripped at the Finishing Line: The Åland Islands Internet Voting Project*. In *International Joint Conference on Electronic Voting* (pp. 36–49). Springer, Cham.
- Fernández-Martínez, J. L., García-Espín, P., & Jiménez-Sánchez, M. (2020). *Participatory frustration: the unintended cultural effect of local democratic innovations*. *Administration & Society*, 52(5), 718–748.
- Geissel, B. (2012). *Impacts of democratic innovations in Europe*. In B. Geissel & K. Newton (Eds.) *Evaluating democratic innovations: Curing the democratic malaise* (pp. 163–183). Routledge.
- Gilman, H. R., & Peixoto, T. C. (2019). *Digital participation*. In S. Elstub & O. Escobar (Eds), *Handbook of Democratic Innovation and Governance*, (pp. 105–118). Edward Elgar Publishing.
- Graeff, E. E. C. (2018). *Evaluating civic technology design for citizen empowerment* (Doctoral dissertation, Massachusetts Institute of Technology).
- Hamm, A., Shibuya, Y., Ullrich, S., & Cerratto Pargman, T. C. (2021, May). *What Makes Civic Tech Initiatives To Last Over Time? Dissecting Two Global Cases*. In *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems* (pp. 1-17).
- Jäske, M., & Ertiö, T. (2019). *The democratic potential of civic applications*. *Information Polity*, 24(1), 21-39. doi: 10.3233/IP-180105.
- Karlsson, M., Åström, J., & Adenskog, M. (2021). *Democratic Innovation in Times of Crisis: Exploring Changes in Social and Political Trust*. *Policy & Internet*, 13(1), 113–133.
- Krumpal, I. (2013). *Determinants of social desirability bias in sensitive surveys: a literature review*. *Quality & Quantity*, 47(4), 2025–2047.
- Lindholm, J. & Berg, J. (2019). *Pocket Democracy – Developing a User-Friendly App for Following Local Politics*, VAKKI Publications 10, 25–38.
- May, A. & Ross, T. (2018). *The design of civic technology: factors that influence public participation and impact*, *Ergonomics*, 61:2, 214-225, DOI:
- Merkel, W. (2019). *Past, Present and Future of Democracy-Policy Review*. Luxembourg: Publications Office of the European Union. <http://dx.doi.org/10.2777/281418>

- Nam, T. 2012. *Suggesting Frameworks of Citizen-sourcing via Government 2.0*. *Government Information Quarterly* 29 (1): 12–20. doi:10.1016/j.giq.2011.07.005.
- Newton, K. (2012b) *Making better citizens?* In: Geissel, B. & Newton, K. (eds.) *Evaluating Democratic Innovations Curing the democratic malaise?* London, New York: Routledge.
- Pogrebinschi, T. (2018). *Deliberative Democracy in Latin America*. In A. Bächtiger, J. S. Dryzek, J. Mansbridge & M. Warren (Eds.), *The Oxford Handbook of Deliberative Democracy*, (pp. 828–841). Oxford University Press.
- Rauschenbach, R. (2019, July 8th). *A look at the Swiss Civic Tech landscape*. <https://www.procivis.ch/post/a-look-at-the-swiss-civic-tech-landscape>
- Sauer, C. (1993). *Why information systems fail: A case study approach*. Alfred Waller Ltd. Publishers.
- Shackel, B. (2009). *Usability–Context, framework, definition, design and evaluation*. *Interacting with computers*, 21(5-6), 339–346.
- Sifry, M. (2019, January 10). *Learning from the civic tech graveyard*. *Civic Tech Field Guide*. <https://civictech.guide/learning-from-the-civic-tech-graveyard/>
- Smith, G. (2009). *Democratic innovations: Designing institutions for citizen participation* (1st ed.). Cambridge: Cambridge University Press. doi: 10.1017/CBO9780511609848.
- Smith, G. (2019a). *Lessons from democratic innovations*. In H. Tam (Ed.), *Whose government is it? The renewal of state-citizen cooperation* (1st ed., pp. 91–108). Bristol: Bristol University Press.
- Smith, G. (2019b). *Reflections on the theory and practice of democratic innovations*. In S. Elstub, & O. Escobar (Eds.), *Handbook of democratic innovation and governance* (1st ed., pp. 572–582). Cheltenham: Edward Elgar Publishing.
- Smith, G. (2019c). *Design matters: CBNRM and democratic innovation*. *Governance Global Practice* 3.
- Spada, P., & Ryan, M. (2017). *The failure to examine failures in democratic innovation*. *PS: Political Science & Politics*, 50(3), 589–772–778. doi: 10.1017/S1049096517000579
- Stempeck, M. & Sify, M. (2018, April 8). *Knowledge from failure: learnings from the Civic Tech Field Guide* [conference presentation]. TICTEC 2018, Lisbon, Portugal. <https://tictec.mysociety.org/2018/presentation/knowledge-from-failure>
- Tauberer, J. (2015 August 7). *My failures: Civic technology ideas that didn't quite work*. Medium.com. <https://joshuatauberer.medium.com/my-failures-civic-technology-ideas-that-didn-t-quite-work-c73ecf730032>
- Toots, M. (2019). *Why E-participation systems fail: The case of Estonia's Osale.ee*. *Government Information Quarterly*, 36(3), 546–559.
- Wilson, B., & Chakraborty, A. (2019). *Planning smart(er) cities: The promise of civic technology*. *Journal of Urban Technology*, 26(4), 29–51. doi: 10.1080/10630732.2019.1631097.
- Wright, S. (2012). *Assessing (e-) democratic innovations: "Democratic goods" and Downing Street e-petitions*. *Journal of Information Technology & Politics*, 9(4), 453–470.

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