How do the Swiss Perceive Electronic Voting? Social Insights from an Exploratory Qualitative Research

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Abstract. Electronic voting is enjoying growing interest within the scientific community. However, the focus is on systems (algorithms, mathematical cryptographic models, user experience, reliability, traceability, security, etc.). Consequently, the purpose of this exploratory research on e-voting is not to address aspects that have already been well-studied by scientists, but rather to understand, through a qualitative research, bottlenecks and sociological obstacles. This understanding will help to explain the reasons that might prevent its adoption by Swiss citizens and also the dissemination of e-voting in the digital age. Based on 25 semi-directed interviews (in German, French and Italian) that we have analyzed, we are able to provide new insights that are more sociological than technological. These insights are essentially related to the social acceptance of e-voting. We observe in particular that the vote in Switzerland has an almost sacred dimension and that the trust that surrounds the voting "ritual" is of supreme importance.

Keywords: Democratic values · Field studies · Self-Determination · Social acceptance · Perception · E-Voting operations

1 Introduction

1.1 Context

Electronic voting is enjoying growing interest within the scientific community. However, the focus is on systems (algorithms, mathematical cryptographic models, user experience, reliability, traceability, security, etc.). Estonia has become a well studied and known case since it has been systematically using it for many years. Switzerland could also become a reference in this field since it already represents a life-size laboratory because of its internationally recognized status as a semi-direct democracy. However, even if a law allows it, the Federal Chancellery remains extremely cautious about these developments. Last June 2019, the e-voting project has been postponed until the end of 2020. As a matter of fact arguments are often used to undermine the credibility of electronic voting, such as its unreliability (amplified hacking in the case

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of the last presidential elections in the United States), or people's tradition and attachment to the voting physical process that are known and understood for a long time. The intergenerational digital divide is also an argument frequently used by some political parties. Thus, our intention regarding this exploratory research on e-voting is not to address aspects that have already been well-studied by scientists, but rather to understand, through a qualitative field research, bottlenecks and sociological obstacles. This understanding will help to explain the reasons that prevent this type of development, as well as its adoption by citizens, in Switzerland. While postal voting has not caused any such resistance, and its use is well accepted and widespread, this is not the case with electronic voting.

1.2 Research Purpose and Contribution

The research project's purpose consists in providing the Swiss parliament and government with sociological rather than technical elements to develop a relevant public policy on electronic voting in Switzerland. Indeed, for the time being, within the framework of the Swiss e-voting project, the Confederation has only surrounded itself with experts (academics, the Confederation and the Cantons), with the aim to implement a fully functioning e-voting system. However, it is indispensable to integrate the opinions, perceptions and the rationale of the Swiss population, as the final users of e-voting is the population who is entitled to vote. Hence, this is also a matter of social acceptance of the new voting system by the population. Our project therefore has the advantage of questioning the population in depth (practically this has been done through 25 semi-structured interviews administered in the three national languages, respectively, German, French and Italian, during the period from January to June 2019). Moreover, it is important to take into account the cultural and socio-demographic characteristics of the different profiles interviewed, to consider all the stages of the different operational processes leading to the vote (ballot box, postal voting, electronic voting), to also integrate the major changes in all sectors of society caused by the global phenomenon of digitalization. Through the analysis of the interview transcripts, we have produced a synthesis of the main findings of this field study. This will allow us to develop, in a next step of this research, a theoretical model explaining the population's perceptions about the development of electronic voting in Switzerland. In a third step, everything will be ready to set up a national quantitative survey to validate the assumptions of our theoretical model in order to make statistical inferences at the national level.

From a scientific point of view, our study would be, to our knowledge, the first of its kind corresponding to a qualitative research taking into consideration the different Swiss cultures (French-speaking, German-speaking and Italian-speaking) that would allow the generation of "meanings" explaining the public's perceptions about the development of electronic voting. Indeed, the scientific literature on this subject is rather sparse compared to that with a more technical orientation. Even if we focus on a small country, Switzerland nevertheless represents a highly relevant and credible "democratic laboratory" on a global scale. It is indeed the country where the most votes are cast in the world and since 2000 more than 200 electronic voting trials have already been carried out (https://www.admin.ch/gov/fr/accueil/documentation/dossiers/E-Voting.html).

1.3 An Approach Anchored on the Notion of Voting Operations

The usual way to form a political opinion in Switzerland is to read official documentation and follow traditional media such as television or the press and recently the Internet. We are also largely influenced by poster campaigns and all-household distributions. However, new media as well as digitized democratic processes are completely changing the situation. Switzerland is the country with the highest number of popular votes in the world. The traditional process consists of a preparation period that can be quite long (about 6 months) in which parties and the media contribute to the formation of voters' opinions. They send their ballot papers by post in advance or go to a voting room, where booths will be made available during the weekend of the vote, as well as voting materials and the ballot box to cast their ballot. Over the years, there has been a decline in participation in these elections, especially among the younger generation. At the same time, our economy is currently undergoing very intense digitization. We are increasingly talking about the "ubiquitous" nature of the economy, which changes the roles assigned to each person and redefines what an expert, a provider or an agent is. In terms of information and opinion forming, roles are also changing with a transformation of the role of the journalist, editorialist and expert. The scandals in the last US presidential elections and the Brexit vote highlighted the fragility of our democratic processes. We intend to address the topic of electronic voting from the perspective of a business process (i.e. voting operations), while focusing on the human aspects. In Switzerland, at the present time, two voting options are available: either the voter goes to the polling station or the voter votes by mail. A third possibility, electronic voting, has recently been accepted in Switzerland, after years of testing. Due to recent developments, the e-voting process is on hold [1]. In the coming years, it could (or not) become a fully-fledged voting option on a par with the two options already in place. Electronic voting is based, like ballot box voting and postal voting, on an operational process, except that most of the steps are dematerialized, since they are digitized. This is called a digital process.

1.4 Organization of the Text

This paper is organized as follows, In Sect. 2, we present a brief literature review about e-voting. In Sect. 3, we describe the methodology that has been employed in this research. In Sect. 4, we present an overview of the main elements of electronic voting perception. In Sect. 5, we present an overview of the main elements of electronic voting security. In Sect. 6, we present an overview of the main elements of electronic voting operations. In Sect. 7, we provide a discussion about the notion of trust and confidence in the voting process. Finally, we conclude and provide directions for further research.

2 Literature Review

2.1 The Digitalization of Service Operations

Electronic voting refers to any process that benefits from the use of electronic technology by electoral authorities for the conduct of elections [2]. As part of our research,

it is important to place electronic voting in a broader field of investigation that generally concerns the digitalization of society. Digitization can be defined as the integration of multiple digital technologies into all aspects of daily life that can be digitized by the conversion of analogue information into digital form so that information can be processed, stored and transmitted through circuits, equipment and networks digital [3]. Thus, referring to the concept of digitization (or digitalization), rather than talking about digital processes, implies that it is an emerging transformation process, in progress, still in the development phase rather than a completed and clearly defined process [4]. These authors believe that digitization corresponds to the characteristic of the information society, as defined by [5], i.e. it is not simply something that is imposed on individuals and organizations, but something that individuals and organizations "do" and produce themselves through daily practice and social interaction. Therefore, if we consider e-voting as a phenomenon of digitalization of our democratic society, we must also analyze it in its integration into the life of voters and in the context of the social interactions in which it is integrated. We live in a digital age, because digital technologies are used today in almost every aspect of life [6] and they play a key role in shaping and regulating societies, communities, organizations and individuals [7].

2.2 Research on the Topic of E-Voting

Let us now return to scientific research that focuses more specifically on the field of electronic voting. We note that the production of scientific articles on this subject over the past decade is very abundant [8], with pioneering scientific works already published at the beginning of the new millennium [9]. One country, Estonia, is a precursor in this field, having made it possible to use electronic voting in its elections since 2005 [10, 11]. However, it should be noted that Estonia has developed strongly from the point of view of digitalization in all sectors of society. This Estonian practice attracts the attention of all regions of the world. This is particularly the case in Europe. The Council of Europe has also issued a specific recommendation on this subject. The Recommendation "Rec (2004)11" on legal, operational and technical standards for electronic voting is a unique reference source in this field. Europe, through the Organization for Security and Cooperation in Europe (OSCE), has sent experts to Switzerland to observe the various test phases that have been planned since 2005. Switzerland can thus be considered as a kind of laboratory for the process of digitizing votes, which has made it possible to develop original scientific research [12, 13].

Most of the scientific contributions in the field of electronic voting deal mainly with technical aspects. There are many articles on the following themes: design and evaluation of electronic voting systems, identification and authentication of voters, reliability, security and safety issues, end-to-end traceability, etc. A recent article [14] provides a comprehensive literature review on all these technical and usability aspects. Research on e-voting also incorporates the "Blockchain" to address supposed vulnerabilities inherent in most existing systems [15]. Some researchers even argue that

traditional paper-based voting is subject to the same security problems. However, since we have been using paper for a long time, people are no longer even aware of security problems related to paper-based voting [16].

2.3 Taking into Account the Human Factor in E-Voting

What is not much studied in academic research, however, is everything that touches on the human aspects of electronic voting, and in particular the public's perception of this new possibility of voting. However, some rare studies of this type exist. This is the case with a survey conducted in Australia that shows that there is a correlation between perceived ease of use and perceived utility of e-voting technologies to determine their acceptance and use [17]. A Malaysian study on a campus shows that when students use e-voting to express themselves on university activities, there is a need to have confidence in the electronic system to ensure a real commitment to voting [18]. As part of this research project, we employ qualitative research to identify and explain the perceptions of e-voting by Swiss citizens about the widespread adoption of electronic voting. To our knowledge, no scientific study has yet been carried out on this subject specifically.

3 Methodology

3.1 Methods

The aim of this study is first of all, through documentary analysis, to better understand the innovations linked to the mode of democratic process that does not lead to digitalization within our societies. It is therefore a question of taking stock of the e-voting initiatives carried out at the global level. Through this documentary research, it was also necessary to understand the situation in Switzerland (legal bases, parliamentary debates, motions, party politics, test phases carried out in the various cantons, etc.). Secondly, we have conducted field research based on an ethnographic approach. Ethnography represents the descriptive study of the activities of a specific human group. More specifically, we use ethnomethodology, which is not based on an a priori theoretical framework. Ethnomethodology makes it possible to identify the latent needs of the target population, to detect social trends for the design and improvement of given public service processes and finally to write scenarios to highlight intangible elements that bring added value to users. In practice, we have launched a field research based on 25 semi-structured interviews administered in German, French and Italian to directly question citizens about their perceptions regarding electronic voting. This research approach is therefore essentially based on the notion of constructivism (or interpretivism). Its main objective is to understand how and why electronic voting, as a new method of voting (on a par with voting by depositing it in the ballot box and voting by post), is at the root of skepticism and opportunities. We therefore believe that this inductive approach is the most appropriate for our research. It is indeed well adapted to the understanding of the perception we have

of the environment under study. The data collected through semi-structured interviews have been analyzed on a content analysis basis (with the help of RQDA and NVivo) according to the codes or code categories used for the analysis of the transcripts. On the basis of the synthesis of the results, we will develop in a subsequent research a new theoretical model to explain the public's major concerns about the adoption of electronic voting. In a third phase of research the generated model will be validated through a quantitative survey.

3.2 Purposeful Sampling Strategy and Interview Guide

For this qualitative research, we used the purposeful sampling technique [19]. The aim is not to be representative of the population studied in order to draw statistical inferences, but rather to "go around the issue". Indeed, a qualitative field research has an exploratory purpose and not the validation of research hypotheses. For inductive and exploratory research, qualitative methods are most suitable, as they can lead to hypothesis building and explanations. Qualitative research also delivers better understanding of motivations, values and attitudes on a given context. Data collected from a small number of carefully selected samples on relevant issues can be sufficient in this case, as it demands a limited number of observations to explain different aspects of the problem area. Low numbers are justified to do an in-depth study [20].

Nevertheless, in our case, we have tried to take into account Swiss cultural diversity (14 interviews in German, 8 in French and 3 in Italian). To have broad social insights, we chose people from different cantons. Moreover, to understand the perceptions of different generations, we chose people covering an age spectrum from 29 to 75 years. Apart from that, the other socioeconomic parameters are not representative of the Swiss population since the sampling strategy was purposeful. All of the interviewees are highly educated [21], most of them have a University diploma and they appear to vote on a regular basis. In our sample, there are solely a few people who are Swiss living abroad and who have already experience with e-voting, to enlarge our insights concerning e-voting. The main topics, guided by authors' discussions (translated into 14 questions) addressed during our semi-structured interviews were: e-voting "customer journey/mode of operation", personal views about electronic voting, trust and security aspects, meaning of e-voting in relation to democracy, habits related to digitization, e-voting for Swiss abroad/disabled people, obstacles and barriers to e-voting. Choices of the different dimensions retained in our interview guide have been based on discussions taking place before the fieldwork and on the literature review of Sect. 2.

4 Findings Regarding E-Voting Perception

4.1 Different Attitudes Towards E-Voting

The qualitative analysis of the interviews revealed different attitudes towards electronic voting. In the following, we tried to identify some patterns of attitudes towards e-voting.

Type 1 is a strong supporter of the e-voting system. He or she is accustomed to the use of digital devices for many daily activities and e-administration, such as e-banking. He or she rather or strongly trusts the political system and/or e-voting. One respondent e.g. has been eager for years to vote electronically: "I would love it. It makes everything more flexible and easier for me" (German-speaker from Valais, female). Respondents of this type of attitude relativize the risks associated to e-voting, as an interviewee underlines "If someone wants to manipulate, he or she will succeed in doing it, no matter the voting type" (German-speaker from Bern, male).

On the other side of the spectrum, type 4 is totally against e-voting and would never vote like that. However, there was only one person who has this attitude among those questioned. This person argues that "a voice cannot be reduced to an action on Internet" (German-speaker from Valais, male). Another argument of this person is that via e-voting "not only Swiss can manipulate the vote, but theoretically the whole world" (German-speaker from Valais, male).

In between this spectrum of supporter and opponent of e-voting, there are different nuances of attitudes towards e-voting. Such a profile (type 3) is rather skeptical towards e-voting. However, this type acknowledges the convenience aspects of e-voting and trusts the system for better or for worse by being aware of the various risks associated with this system. One respondent says: "I have always been very skeptical, because I asked myself: is it really enough secure?" (German-speaker from Solothurn, male). Then, we could identify another type of attitude (type 2) that is characterized by a limited interest in e-voting and do not have a strong feeling of support of or opposition of e-voting systems. The reasons for this attitude can be different. Some of them say that "the introduction of e-voting corresponds to modern times" (German-speaker from Schaffhausen, female/German-speaking from Valais, female). People with this attitude think that e-voting is a logical consequence of current technological developments, which also influence the way people vote. Another reason can be that "they have not yet had the time to deal with that topic" (German-speaker from Basel, female/German-speaker from Fribourg, male). One respondent mentioned that he has not yet become accustomed to this "e-government logic" (German-speaking from Fribourg, male). Yet, these latter persons are also aware of the risks associated with e-voting.

Several interviewees mentioned that they are more or less obligated to trust the system, as they have not the time, nor the interest or competence to understand in detail the technological process of e-voting. Therefore, interviewees trust the system in general, but one of the respondents says that a lack of security would indeed be a no-go. Another interviewee says "if there is somewhere a chance, to forge the vote, then it is a no-go for me." (German-speaker from Schaffhausen, female).

4.2 Pros and Cons of E-Voting in General

When asked about the advantages of e-voting (see Table 1), respondents stressed in particular the flexibility (independence in terms of time and place) and the efficiency and simplification of the process (German-speaker from Aargau, male). One respondent says "you do no longer have an excuse for not going to vote" (Italian-speaker from Ticino, male). Some respondents also mentioned the environmental aspect, which means that less paperwork is needed. However, some interviewees wondered whether it

really would be a simplification of the process. They are therefore a little skeptical on this point. An atypical answer was that one advantage would be that "the envelope does not have to be licked like during the postal vote" (German-speaker from Valais, male). Even if many respondents mention the convenience aspect as one of the main advantages of electronic voting, the two interviewees having already used e-voting systems (one abroad, one in Switzerland), underline that they perceived the process itself as being more complicated than the postal voting process because of additional security barriers. However, most interviewees not having used e-voting so far, think that e-voting has the potential to be easier than the other types of voting. They underline that login and password issues, loading problems or a missing confirmation, that the vote has been validated, could complicate things. Many respondents also think that the current system works very well and they wonder why it should be changed. This general lack of interest is reflected in the responses of the interviewees concerning the question, if they have already informed themselves about e-voting; a question that almost all of the interviewees denied.

Table 1. Pros and Cons of E-Voting

Pros	**Cons**
Better for young people	Could be a problem for elderly people
Flexibility, efficiency (process and concerning resources), simplicity Less people and resources needed	Is it really easier? Logins, passwords could be more complicated than by postal vote The current system functions very well, very easy Lack of social contact Less work for postman, at the beginning a lot of technical and financial effort
Security	Manipulation (also a problem for other vote systems), hacking, data abuse
Additional technological elements possible (like interactive tools, mistake detection, e.g. concerning elections)	You need internet (but it is a matter of course today)
More ecological	

Cons (see Table 1) are particularly related to the possibility of manipulation and hacking. The respondents mentioned that people might be afraid of not having guaranteed the anonymity of the data. However, they mentioned this point when talking about possible reasons why some Swiss citizens are not satisfied with the introduction of e-voting, not concerning themselves. Except for one person, most respondents express some concerns about the security aspects. Many of them also mention that today's systems already work very well and that there is no immediate need to change a well-functioning system to which the Swiss are accustomed. Another reason one respondent mentioned about possible concerns of the Swiss population is that they are worried that other people will not vote as seriously as they need to when voting online. Another argument is the loss of social contact, which already affects postal voting.

Respondents also mention that some time must pass before changes are implemented. Respondents also note that older people may have some difficulty voting online.

Therefore, it would be important to retain the other voting options such as postal voting and go to the ballot box. Some respondents argue that it would certainly be more interesting for younger people. One respondent stressed that e-voting is simply not trustworthy in terms of technical aspects and data abuse. Another respondent mentions the Internet's associations with electoral influence in the US and Europe. Another disadvantage of e-voting could be that paper seems to be more "binding" than voting on the Internet.

4.3 Opportunity or Risk for Democracy?

Several respondents think that e-voting is rather an opportunity for democracy than a risk, although one of them underlines the importance of security being guaranteed. Two interviewees think that e-voting will quickly become the norm. Another respondent thinks that it makes voting easier for everyone and more comfortable for Swiss people living abroad.

We also asked the respondents, if they perceive e-voting being a thread for a potential "sacred" meaning ritual dimension of current Swiss voting practices. Most of them do not think that e-voting would mean a "desacralization" of the voting process. Some of them could imagine that this could be the case for other people, who celebrate the social and ritual element of going to the ballot box. One interviewee indicated that this kind of "desacralization" has already happened by introducing the postal vote.

5 Findings Regarding E-Voting Security

5.1 Trust in Relation to Security Aspects

Except for one respondent, the majority trusts the Swiss political system and the e-voting technology. In general, interviewees tend also to trust the government and the professionals dealing with the technology. Two of the interviewees say that it is important to have confidence, as technology is far too complicated for normal citizens to be able to understand everything.

People also generally are accustomed to e-banking, which includes the management of incidents and insurance protection. Most of the interviewees are accustomed to e-banking and thus trust the system. The respondent who is totally against e-voting also uses e-banking. This respondent adds that e-voting differs from e-banking insofar as the banking system has not been hacked so far, which is however the case for the e-voting system managed by the Swiss post enterprise. This same respondent underlines that "a problem with e-voting leads to a collective damage, whereas a problem with the e-banking system only concerns the money of an individual" (German-speaker from Valais, male). Another interviewee however says that for her the personal damage would be much more important than the collective one. Even another respondent says that, normally it should be possible to realize when a vote is manipulated, as there exist surveys in the run-up to the votes that give an approximate picture of the voting results. Even if the

security aspect is very important for all the respondents, some of them relativize the problem by highlighting that the risks of manipulation and loss of anonymity also exist with regard to postal vote and when going to the ballot boxes. However, some of them underline that the damage extent could be much higher with an e-voting system, especially at a national scale, whereas with the conventional types of voting (postal vote and ballot box) the risk seems to be higher at the local level. One respondent even says that e-voting seems more secure to her than the other types of voting. Moreover, some of the interviewees mention that e-voting is especially secure regarding the counting procedure.

5.2 Information Needed for Transparency

Respondents said that it would be quite important for them to be informed about the concrete procedure of the e-voting process in terms of an instruction, as well as in terms of security measures that have been taken. One interviewee however adds that the government's main aim was to reassure the citizens concerning security measures, which relativized the value of the information. Another interviewee says that an info-button dealing with security aspects could be helpful (German-speaker from Valais, female). As to the concrete procedure to vote online, some of the respondents would like to have an easy operating manual, or explanation in a video.

5.3 Influence on Voting Participation, Voting Results and Voting Decision

While most of the interviewees think that the introduction of e-voting would only slightly influence the voting participation or even not at all, one interviewee guesses that the participation from Swiss people living abroad could increase. This respondent also believes that the possibility to vote directly with the smartphone could be a reason for people to vote more often.

In general, however, the interviewees think that voting participation is a matter of interest and education rather than of the means of voting. Nevertheless, two interviewees say that they personally would vote more often, if they could do it online. In this context, it is important to bear in mind that all the interviewees have a very high participation rate in voting.

As to a potential influence on voting results, most interviewees do not think that the possibility to vote online changes the voting results in a significant way. Some of them think that it could maybe lead to a slightly higher participation of young people, but not a significant one.

We also asked interviewees what they think about e-voting influencing the voting decision of people. A majority of the interviewees guess that this could be possible in some rare cases or not at all. An example of such a rare case would be that the voter changes his or her mind regarding the voting decision later in time. Hence, when having voted electronically, he or she will not be able any more to correct his or her opinion. When doing a postal vote however, this would still be possible. However, this aspect does not seem to have a big importance for the interviewees. Moreover, one interviewee even said that the e-voting process strengthens the seriousness of voting, as

one is conscious of the "seriousness of the moment and the consequences of your choice" (Italian-speaker from Ticino, male). It implies a shift of responsibility, in a digital platform all decisions are made autonomously and at one's own risk.

6 Findings Regarding E-Voting Operations

6.1 Important Aspects of the Voting Process and Suggestions for Improvement

As to the e-voting process, many respondents say that it is especially important to have an easy process. The user should receive a voting confirmation, and even if there are some loading problems, he or she should know if his or her vote was sent. Some of the interviewees also mention that e-voting via smartphone should be possible. The respondent having experience with e-voting abroad mentions that he "really appreciated to be able to choose between postal vote and e-voting" (German-speaker from Aargau, male), meaning that he did not have to choose once and for all for between the two possibilities. Another respondent suggests to use a password that can be scanned with a smartphone and that leads you directly to the right website.

However, when talking about the current voting process, most interviewees say that the process already works very well. One interviewee says that "it is important to ensure in the future that the e-voting will not be the only way but one way to vote" (Italian-speaker from Ticino, male). The most important aspects needing improvement rather concern the steps in the voting process than the voting means.

Two interviewees mention that the voting questions are sometimes asked in a confusing way. Some of the interviewees criticize the content of the brochure the federal government adds to the voting documents. This brochure summarizes the arguments of the advocates and opponents and informs the reader of the recommendations of the federal government. One interviewee thinks that there is not enough space for the people having started an initiative to express their arguments. The opinion of another interviewee goes in the same direction. He thinks that the brochure is too propagandistic and that the neutral aspect is somehow missing. One respondent thinks that there should be more options to vote about, not only yes or no.

When talking about other possibilities how technology could improve the voting process, some of the respondents said that it would be interesting to create an application that informs about the opinions of the parties, and provide access to neutral information sources. Another interviewee mentions the creation of a reward system for participation in votes to increase voting participation. Another idea is to show the party and voting financing in real time. This could make the population more aware of the differences in budget of the different parties. Another respondent says that it is not so much about how and where to vote, but about the collection of largely neutral, correct and professional information that is independent from political power struggles or economic interests. Another person says that it would be interesting if newspapers would provide online information files dealing with the voting topic. One respondent suggests an online "one-stop-shop" like an application, where you can inform yourself about different points of view, vote and see the results.

To sum up, among the respondents there was only one person who is totally against e-voting mainly out of trivialization of the process and security reasons. In general, the interviewees have not or not much informed themselves about e-voting and they are rather happy with and accustomed to the current system, being a matter of habit. Therefore, people need some time to become accustomed to e-voting. Some of them think that it could be more convenient and comfortable to vote online, but estimate the risk of manipulation of voting results as higher than with traditional voting means. In general, e-voting must provide a personal additional benefit for voters, otherwise, they are not so much interested in changing their habits. This confirms the findings of the Australian study [17].

E-voting seems to be an advantage especially for Swiss people living abroad. However, in general, most interviewees think that participation issues do not depend on the voting means, but rather on general political interest and education or on the complexity of the voting topic. Most of them guess that e-voting would not significantly change the participation or even voting results. They are also skeptical of the voting means having an influence on the decision. Some of them think that technology could be useful to improve the information collection stage, as they think that it is not an easy task to inform oneself in a neutral way about quite complex voting topics.

Moreover, the majority of the interviewees trust in the government and technology. They however agree that voting results can always be manipulated, and that the extent of manipulation increases with e-voting. Table 2 summarizes the findings of Sect. 6.

7 Discussion: Trust and Confidence in the Voting Process

The results of the interviews generally confirm that the perception of electronic voting is strongly associated and correlated with the professional demographics of voters. It is understood that the professional background of electors influences their attitude towards electronic voting. Those working in a highly digitalized world and directly witnessing the digital transformation of their businesses are likely to adopt the electronic voting system as another information and communication technology tool for democracy.

On the other hand, the perception of citizens, who work in security activities that consist in ensuring the security of people and property, with regard to electronic voting is cautious and sometimes very negative. For the latter, there is no tangible evidence of the correct recording of votes because a computer screen can display one thing and record another.

In this field research, trust is highlighted as a particularly important condition for the use of the electronic voting system. Beyond the technical malfunctions that can affect the accuracy and validity of votes, there seems to be a major concern regarding the vulnerability of electronic voting systems to manipulation by external hackers. Although manipulations can occur by internal local agents, these intrusions can only affect local and isolated structures. There are also risks with traditional voting systems with recent examples in some democracies where it was necessary to recount votes. Electronic voting opens up new possibilities for a single hacker, who may be anywhere in the world, to affect the central system disrupting the entire nation. The perception of

Table 2. Current difficulties linked to the voting process and potential of improvement along the different voting stages

1. Information collection and voting documents	
Difficulties	*Proposed solutions*
Too much, scattered and biased information, not enough time available for information	(1) Application regrouping neutral information (2) Linking e-voting platform to neutral information (3) Newspaper provide online information files (4) Interactive platforms with customized information based on one's political profile (5) State-organized sensitization with regard to the potential of being influenced by social media e.g. (to promote critical opinion forming skills) (6) Inform citizens about budget of the parties for financing their campaign (7) One stop shop for information on different points of view, reminder for votes information, results (8) A personalized digital communication, e.g. save the personal decisions of past votes
Voting questions are not clear enough	Easier formulation of questions
Complex voting topics are reduced to yes or no questions	More choice
Content of the official voting brochure not neutral enough, too easy/propagandistic	Two parts: one easy part and one more intellectual part
Forgetting about vote	Reminder via e-mail or application e.g.
2.Voting process depending on voting type	
Difficulties	*Proposed solutions*
e-voting: - Too complicated - Lack of security	It has to be as easy as possible (time-saving, comprehensible, intuitive), accessible for everyone (1) Password scanning and direct arrival on the website (2) Voting confirmation (3) Possibility to do everything orally
Postal vote: - The process is ok as it is - You have to lick the envelope, which is not comfortable - You have to put a stamp	
3. Information about results	
Difficulties	*Proposed solutions*
No particular difficulties	Inclusion in application that integrates the whole process, from information collection, to voting, to results

risk from an electronic perspective is more global, where a group of people of an individual can intervene and hack from anywhere on the planet.

The need to combine secrecy and individual verifiability is one of the most important attributes identified in this research. Indeed, unlike the e-banking system, where citizens can check their account statements at any time to ensure that all transactions are recorded correctly, one can check the accuracy of a bank transaction afterwards, by checking account statements online or by printing on official banking documents. Electronic voting operations concerning secrecy and verifiability (universal and individual) are still not clear to voters. In addition, in the event of embezzlement, the bank has insurance, through its after-sales service, to compensate its customers. All information necessary for data integrity can be stored and tracked, eliminating any secrecy between the customer and the bank. In the event of technical malfunction or external interference, these failures or manipulations may go unnoticed.

Swiss citizens will probably trust the electronic voting system and their officials. In the case of electronic voting, their trust does not need to be earned at this time, but it can only be easily lost. The technical challenges of electronic voting open doors for private companies and investors to sell their technologies. There is concern that personal data and individual voting preferences may be in their possession. It is imperative to maintain the confidence that only the government should control all systems. The government must be the sole guarantor of the entire system. With the trust established with the government, the voter is not very interested in learning more about verifiability or verification.

The results also show that the electronic voting system is accepted as a complementary means, but should not replace the postal voting system and the ballot box. This new possibility of voting will not significantly increase the number of people who participate in the vote or change their voting habits, as people vote because they want to, and not because of the different possibilities offered.

In a traditional voting system, voters have learned to trust their fellow assessors not to open the ballot box before the counting, which is a public operation understood by all voters. In the case of wrongdoing, citizens are able to accept human fault because they too can make mistakes in their own work. However, it is still difficult to accept and understand the mistakes made by software. The government official could then keep some form of electronic voting ceremony such as broadcasting live the count happening in the back-stage process.

8 Conclusion

The objective of this exploratory research was to focus on the social aspects of electronic voting. Indeed, an abundant scientific literature already covers the technical aspects of e-voting (algorithms, security, etc.). The justification for this research objective, which focuses on rather social aspects, stems first of all from the fact that electronic voting, for various reasons, is barely fully established in Switzerland, whereas many test phases have already demonstrated the feasibility of this operational process and it has recently been accepted as an official way of voting. In this research, we intended to study the perceptions of Swiss citizens regarding electronic voting, and

to understand their meanings through a qualitative field research (based on semi-structured interviews). The most important findings are presented in the three following categories: electronic voting perception, electronic voting security and electronic voting operations. These insights are essentially related to the social acceptance of electronic voting. We observe in particular that the vote in Switzerland has an almost sacred dimension, as opposed to other cultural contexts, such as [5, 13, 17, 18] and that the trust that surrounds the voting "ritual" (i.e. voting operations and processes) is of supreme importance.

Through this research project on electronic voting, which focuses on the human factor dimension, we believe that this study will help to develop relevant and practical managerial precepts to better implement these digitized operations processes in the future.

Nevertheless, this study is not without limitations. As the data collection was just completed when writing the paper, more in-depth analysis iteration of database must still be completed to improve the relevancy of our conclusion. The size of the sample (25) is still too limited to draw more generic conclusions. It was however our aim to investigate the "how" and "why" of perceptions of Swiss citizens rather than percentages as it is the case in a quantitative survey. In a further research, we intend to conduct a quantitative survey based on the qualitative findings presented in this paper.

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