

The use of technology in the election process:

Who governs?

Abstract

The goal of elections is not simple to determine the winners and losers, but also to give legitimacy to the winners, even for those voters who did not vote for them (Katz 1997). This stresses the need for free, fair and secret elections (Merloe 2009). Part of that is that elections are governed by impartial and independent, transparent and accountable electoral management bodies (Lekorwe 2006). The question of the use of new technologies to improve the election process has recently risen in different countries around the world. Although forms of electronic voting might be useful to enhance turnout or help with the counting and tabulation process, its use raises questions of governance of the election process. An election in which technology is used requires a greater technical knowledge (Schwartz and Grice 2013). If an electoral management body does not have this knowledge, it might have to rely on private companies to run the election process. Such a private company could have vested interests in the outcome of the election, raising the issue of impartiality (McGaley and McCarthy 2004). In any case, a private company cannot be held to the same standards of independence, transparency and accountability that is required of governmental bodies (Maurer 2016) This raised the question of governance of elections in case new technologies are used. Although there is some comparative research on the use of electronic means in the election process, there is so far little data on these governance issues. This paper reports new data from an international survey of electoral management bodies (n=43) and electoral officials (n=1120) with data from over 50 countries. With the use of that data, this paper makes an important contribution on the question who governs elections when technology is used.

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1. Introduction

ICT and elections

The use of different forms of technology in the election process has been on the rise. More and more countries use information and communication technology (ICT) to try to improve their election process. Often when thinking about e-enabled elections, there is a tendency to think about e-voting and I-voting only. However, there are many phases during the electoral cycle where some form of ICT can be used. An example which became very clear during the 2008 US presidential elections was the use of electoral campaigning through social media. Many countries in the world, including some of the newer democracies use forms of electronic voter registration and identification, for example through the use of biometrics. Tabulation and publishing of results can also be done with the use of ICT, as well as (re)districting. When talking about these new technologies, one should be aware that most of the applications that are used are not seen by the voters, since they are only used by the election administrators. These are applications such as electoral registers, software for registration of parties and candidates and software for tallying and calculating results. However, nowadays, voters are also confronted with ICT solutions in voting in some countries where forms of e-voting are introduced. This can range from fairly simple forms such as a scanner that counts the ballot as the voter puts it in the ballot box, to the use of voting computers in the polling station, but also remote voting through the internet. The use of these new technologies raises new challenges for election management bodies (EMB)

Independent and impartial EMBs

The importance of an independent election management is due to the fact that after an election, winners and losers of that election can differ in their attitude towards the fairness of that election. If both sides see the outcome of the election as the result of a fair, legitimate process, it is more likely that they will trust the government and be more satisfied with democracy as a whole. Thus, there might be no public administration task more central to guarding democracy than providing for elections that accurately reflect voters' intentions and ensure public confidence (Moynihan 2004). The problem is that even though most states hold elections, the fairness of the election and the free expression of the voters' will is not necessarily guaranteed. Elections can be unfair, either because they are intentionally rigged, because campaign conditions disproportionately favour the ruling party, or because administrative inefficiencies exist. Election outcomes can also be ignored for several reasons, e.g., because the winning party is deemed to abolish democracy in the future. And independent EMB can help to ensure that elections are as fair as possible. Also, research shows that one of the factors that contributes to the belief in the integrity of elections is the position of the electoral management body. If this EMB is perceived as independent and impartial, it makes it more likely that even the people that lost the election perceive the outcome as just.

2. EMBs and technology

With the growing use of technology in the election process, there has been an increase in studies and literature dealing with this topic. Especially when it comes to e-voting solutions, such as the use of voting computers (DREs) and internet voting, more and more attention is given to questions of security and accessibility. One area that remains understudied however is that of the consequences of the use of technology for the independence of EMBs. It seems

to be very common for countries to use private companies in the election process, not only to provide the technological solutions, but also the technical support on Election Day itself. Bradwell and Gallagher (2007) mention the dangers of merging public and private sector roles: “This developed through the contracting out of public service delivery to the private sector in the 1980s, and has progressively blurred the distinction between the two as their functions intertwine. This has served to exacerbate the questions of power, responsibility and coercion in both.”

Challenges

Governments turn to new IT solutions in the election process for different reasons. Often, introduction of ICT is seen as a necessary step in the fight against declining turnout. In other cases, improvement of the integrity of the voting process is mentioned. Also, the speedy delivery of results might be a reason to introduce for example electronic counting of ballots (Remmert 2004). However, when they do so, they face different challenges. The first problem that often occurs is a lack of IT skills within government itself (Moynihan 2004). In general, governments cannot offer people with a high level of knowledge of IT the same salaries as private companies (Cordella and Willcocks 2010). Governments therefore lack the capacity, resources and personnel, not just to develop these solutions, but also to be able to adequately monitor them (Gauld and Goldfinch 2006). This means that governments often have to resort to contract private sector IT providers, also known as outsourcing. Although outsourcing can have beneficial effects and is not necessarily something that should be avoided, its role in elections deserves more attention. Outsourcing can lead to an uneven relationship between big IT companies and less knowledgeable government agencies (Oostveen 2010).

Vendors

There are several companies that provide IT services for governments. Most e-voting systems are outsourced to private companies instead of being developed within a governmental agency. Xenakis and Macintosh (2005) express the problematic side of this development: “The e-electoral process, due to its democratic nature, cannot be fully outsourced to commercial suppliers.” Moynihan (2004) points out that while failure in e-government services might be inconvenient for citizens, the risks are lower since such a failure does not necessarily pose fundamental risks for the government or society. However the failure of e-voting technology can have profound consequences for the public confidence in the electoral system. As he states: “the consequences of a failed election are much greater, and the adoption of e-voting has increased the risk that such failure will occur.”

Any successful technical and organizational innovation requires a stable alignment of the actors: the designers, the vendors, the users and the sponsors. However, many of these actors are private organizations, which means that the use of technology leads to a complex form of private-public partnerships, where the presence of powerful intermediaries like the computer vendors, or the global consulting firms, means that more and more activities are delivered by non-state entities. States are handing over or subcontracting outright, their tasks and resources (Ciborra 2005).

There are good reasons to involve manufacturers and vendors when introducing IT solutions. They are usually very aware of existing systems and can therefore provide valuable information as to what is possible and what not. Manufacturers and vendors can give advice on possible risks and benefits and experiences in other countries. They can give insight in the

costs of the system they can provide and they are usually able to advise on the implementation process. A final benefit might be that choosing an existing system might be cheaper than building a new one.

However, the risk of this early involvement is that manufacturers and vendors have their own interests and are therefore never completely neutral in their advice. They of course, as any business need to sell their products. This might mean that the EMB might not be able to be completely free in their demands of a system, because they will be pushed towards a specific system. Also, it might not always be clear, especially with large, international companies, who the owners and people in charge are. Given the importance of elections in the allocation of power in a country, this might not be a desirable situation (Driza Maurer 2016, McGaley and McCarthy, 2004). However, not involving existing companies and for example choosing to build a government owned system has negative sides as well. Besides the cost factor, it might be difficult to maintain a level of expert knowledge that is necessary, not only to build the system, but to keep it running. Also with a new system that has not been used in other countries, there is less knowledge about possible problems. The main thing to keep in mind is that whatever route is taken, even when e-voting is successfully introduced, government cannot step back and let the market and suppliers take over. There should always be enough knowledge of the system within government to make informed decision concerning its use and the possible risks of the system. As was recently confirmed by the Conference of Electoral Management Bodies, the electoral management bodies' choice of new technologies should be guided by the needs of the electoral process and not by the interest of technology providers.¹

Ownership of technology

A final area where the use of ICT in elections leads to questions is that of the ownership of the technology. Commercially available e-voting solutions are often based on proprietary source code. For commercial and security reasons, vendors are sometimes reluctant to provide access to this source code. This can be problematic since it hinders the transparency of the election process as it leads to less options for public inspection of the source code (International IDEA 2011). Also, the argument that companies use overlooks the potential for internal programming errors in software, either deliberate or accidental (Moynihan 2004).

Research questions

Therefore, this paper looks into the role of EMBs when technology is used; do they have a role in the decision-making process, do they own the technology and who provides support on Election Day. It also studies if and how the positioning of the EMB affects these questions; do countries with an independent EMB show a different pattern than countries without one.

3. Data

The data for this paper was collected by means of a survey that was sent to electoral management bodies. This survey collected institutional-level data such as the way in which members of the EMB are appointed, the composition of the EMB, the budget and the number of staff. With regards to the use of IT, five specific questions were asked (see appendix 1). The survey was translated into 33 languages. The Electoral Management Survey (EMS) was designed and administered by the author and colleagues in Europe (James et al. 2017). A sister survey was administered by the Electoral Integrity Project, called ELECT to non-European

¹ Conclusions of the 13th European Conference of the Electoral Management Bodies, Bucharest 2016.

countries which includes similar questions (Karp et al. 2016). Non-European countries which didn't respond to the ELECT survey were then followed up with the EMS. All data was collected between July 2016 and September 2017. For the purpose of this paper, currently only the EMS data is used.

In some countries, there is more than one EMB at the national level. For example in the Netherlands responsibility for the organisation of elections is shared between the Electoral Council (Kiesraad) and the Ministry of the Interior. In these cases both institutions were asked to fill in the survey.

4. Results

First, it is interesting to see what technology countries use in elections. The following table gives an overview.

country name	software for registration of candidates	software for registration of voters	biometric voter identification	voting machines	internet voting	software for tabulation of results	devices for electronic counting ballots	automated incident reporting system
Albania	yes	no	no	no	no	yes	no	no
Belarus	no	no	no	no	no	no	no	no
Belgium	yes	yes	no	yes	no	yes	yes	no
Bosnia Herzegovina	yes	yes	no	no	no	yes	no	yes
Bulgaria	no	no	no	yes	no	yes	yes	no
Croatia	yes	no	no	no	no	yes	no	no
Czech Republic	no	no	no	no	no	yes	no	no
Denmark	yes	yes	no	no	no	yes	no	no
Estonia	no	no	no	no	yes	yes	no	no
Finland	yes	yes	no	no	no	yes	no	no
Greece	yes	yes	no	no	no	yes	no	no
Hungary	yes	yes	no	no	no	no	yes	no
Hungary	yes	yes	no	no	no	yes	yes	no
Ireland	no	yes	no	no	no	yes	no	no
Israel	no	no	no	no	no	yes	no	yes
Kyrgyz Republic	no	yes	yes	no	no	yes	yes	no
Latvia	yes	yes	no	no	no	yes	yes	yes
Luxembourg	no	no	no	no	no	yes	no	no
Malta	yes	yes	no	no	no	yes	no	no
Moldova	yes	yes	no	no	no	yes	no	no
Netherlands	yes	yes	no	no	no	yes	no	no
Netherlands	yes	yes	no	no	no	yes	no	no

Norway	no	no	no	no	no	yes	yes	yes
Norway	no	no	no	no	no	yes	yes	yes
Poland	yes	yes	no	no	no	yes	no	no
Romania	no	yes	no	no	no	yes	no	no
Russia	yes	no	no	no	no	yes	yes	no
Slovakia	no	no	no	no	no	no	no	no
Spain	yes	yes	no	no	no	yes	no	no
Spain	no	no	no	no	no	no	no	no
Spain	no	yes	no	no	no	no	no	no
Sweden	no	no	no	no	no	no	no	no
Switzerland	yes	yes	no	no	yes	yes	yes	no
Turkey	yes	yes	no	no	no	yes	no	yes

Interesting to note is that only Belarus, Slovakia and Sweden report that they are not using any form of electrical devices or software in their election process. This shows that e-enabled elections are nowadays the norm and no longer the exception.

Next it is interesting to look at the role of the EMB in the decision-making process.

		Frequency	Percent	Valid Percent
Valid	decisive	15	44,1	50,0
	advisory	8	23,5	26,7
	no involvement	3	8,8	10,0
	mixed, see text	4	11,8	13,3
	Total	30	88,2	100,0
Missing	System	4	11,8	
Total		34	100,0	

Out of the 34 countries, only 15 EMBs have a decisive role in the decision whether or not to use electronics in the election process. In 9 countries it is the national legislature who makes this decision, in 5 countries the national executive and in 3 countries another body is involved.

When looking at the different countries, the results are as followed:

country name	role EMB in decision-making devices	national legislature	national executive	body of local government	other, namely:
Albania	advisory	yes	no	no	
Belarus		no	no	no	
Belgium	decisive	no	no	no	
Bosnia Herzegovina	decisive	no	no	no	
Bulgaria	decisive	no	no	no	

Croatia	decisive	no	no	no	
Czech Republic	decisive	no	no	no	
Denmark	mixed, see text	no	no	no	
Estonia	decisive	no	no	no	
Finland	decisive	no	no	no	
Greece	decisive	no	no	no	
Hungary	no involvement	no	no	no	National Election Office
Hungary	decisive	no	no	no	
Ireland		no	no	no	
Israel	advisory	yes	no	no	
Kyrgyz Republic	advisory	yes	yes	no	
Latvia	decisive	no	no	no	
Luxembourg	advisory	yes	no	no	
Malta	decisive	no	no	no	
Moldova	mixed, see text	yes	yes	no	
Netherlands	mixed, see text	no	yes	no	
Norway	advisory	yes	no	no	
Norway	decisive	no	no	no	
Poland	decisive	no	no	no	
Romania	advisory	yes	no	no	
Russia	decisive	no	no	no	
Slovakia	no involvement	yes	no	no	
Spain	advisory	yes	no	no	The INE, supervised by the Information Technologies and Communications Department, State Secretariat of Public Administrations, Ministry of Finance and Public Administration.
Sweden		no	no	no	
Switzerland	advisory	no	yes	no	

Turkey	decisive	no	no	no	
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Interesting to note is that no country leaves this decision to a body of local government. As stated earlier, the use of technology is not a matter of simply replacing paper with a form of electronic device; it requires a complete redesign of the election process. The fact that in almost half the countries the EMB is not the one to make this decision, but is faced with the decision by another actor has consequences for the independence of the EMB when it comes to the election process and the way it is run.

Another relevant question is that of ownership of the technology used in elections.

Ownership	Frequency	Percent
EMB	21	61,8
Body of central government	6	17,6
Body of local government	4	11,8
Private company	9	26,5
Other	5	14,7

When looking at the different countries, the results are as followed:

	country name	EMB	body of central government	body of local government	private company	other, namely:
1	Albania	yes	no	no	no	
2	Belarus	no	no	no	no	
3	Belgium	no	yes	no	no	
4	Bosnia Herzegovina	yes	no	no	no	
5	Bulgaria	yes	no	no	yes	Part of the software is owned by a state-owned company, another part of private companies. The voting data processing software is owned by the CEC
6	Croatia	yes	no	no	no	

7	Czech Republic	yes	no	no	no	
8	Denmark	yes	yes	yes	yes	
9	Estonia	yes	no	no	no	
10	Finland	yes	no	no	yes	
11	Greece	yes	no	no	yes	
12	Hungary	no	no	no	no	National Election Office, State Company
13	Hungary	yes	no	no	no	
14	Ireland	no	no	no	no	
15	Israel	yes	no	no	no	
16	Kyrgyz Republic	yes	no	no	no	State Registration Service under the Government of the Kyrgyz Republic
17	Latvia	yes	no	no	yes	
18	Luxembourg	no	yes	yes	no	
19	Malta	yes	no	no	no	
20	Moldova	yes	no	no	no	
21	Netherlands	yes	no	no	no	
22	Netherlands	no	no	no	no	
23	Norway	no	yes	no	no	
24	Norway	yes	no	no	no	
25	Poland	yes	no	yes	no	
26	Romania	yes	no	no	no	
27	Russia	no	no	no	no	Russian Federation
28	Slovakia	no	yes	no	no	
29	Spain	yes	yes	no	yes	
30	Spain	no	no	no	yes	
31	Spain	no	no	no	yes	EI INE
32	Sweden	no	no	no	no	
33	Switzerland	no	no	yes	yes	
34	Turkey	yes	no	no	no	

Finally, we asked about technological support given on Election Day.

Here the results show that in 14 cases it is the EMB staff who provides support, in 7 cases it is done by employees of central government, in 4 cases by employees of local government and in 19 cases by employees of a private company. In 5 cases support is given by another party.

The results per country are as followed:

	country name	EMB staff	employees of central government	employees of local government	employees of private company	other, namely:
1	Albania	yes	no	no	yes	
2	Belarus	no	no	no	no	
3	Belgium	no	yes	no	no	
4	Bosnia Herzegovina	yes	no	no	no	
5	Bulgaria	no	no	no	yes	Employees of a state-owned company - Information Services AD
6	Croatia	no	no	no	no	An IT company with a DIP has signed a contract
7	Czech Republic	yes	no	no	yes	
8	Denmark	no	yes	no	yes	
9	Estonia	yes	no	no	yes	
10	Finland	yes	no	no	yes	
11	Greece	yes	no	no	yes	
12	Hungary	no	no	no	yes	Employees of state company
13	Hungary	no	no	no	yes	Employees of state company
14	Ireland	no	no	no	no	
15	Israel	yes	no	no	yes	
16	Kyrgyz Republic	yes	no	yes	no	State Registration Service under the Government of the Kyrgyz Republic
17	Latvia	yes	no	no	yes	
18	Luxembourg	no	yes	yes	no	
19	Malta	yes	no	no	no	
20	Moldova	yes	no	no	no	
21	Netherlands	no	no	no	yes	

22	Netherlands	no	no	no	no	
23	Norway	no	yes	no	no	
24	Norway	yes	no	no	no	
25	Poland	yes	no	yes	no	
26	Romania	no	no	no	yes	
27	Russia	no	no	no	yes	
28	Slovakia	no	yes	no	no	
29	Spain	no	yes	no	yes	
30	Spain	no	no	no	yes	
31	Spain	no	no	no	yes	EI INE
32	Sweden	no	no	no	no	
33	Switzerland	no	yes	yes	yes	
34	Turkey	yes	no	no	yes	

I undertook a first statistical analysis of the data. This shows that when looking at a possible correlation between the independence of the EMB and the ownership of the technology, there is a statistical correlation.

		independencecode	ownership private company
independencecode	Pearson Correlation	1	-,386*
	Sig. (2-tailed)		,027
	N	33	33

*. Correlation is significant at the 0.05 level (2-tailed).

Since the variable independencecode is coded in such a way that a higher score means greater independence, this correlation shows that in countries where the EMB is more independent, it is less likely that the ownership of the technology used is in the hands of a private company.

However, when it comes to a relation between the ownership of the technology and the question who provides technical support on Election Day, results are more mixed. When a private company has ownership, it is more likely that this support is provided by employees of a private company.

		employees of private company	private company
employees of private company	Pearson Correlation	1	,533**
	Sig. (2-tailed)		,001
	N	34	34

** Correlation is significant at the 0.01 level (2-tailed).

When ownership is in hands of central and local governments, there is a negative correlation with the variable support given by employees of a private company, but this is not significant.

		employees of private company	body of central government
employees of private	Pearson Correlation	1	-,210

company	Sig. (2-tailed)		,233
	N		34

		employees of private company	body of local government
employees of private company	Pearson Correlation	1	-,043
	Sig. (2-tailed)		,808
	N	34	34

Interesting, when the EMB owns the technology, there is a higher chance that support is given by employees of a private company, but again this is not a significant correlation.

		employees of private company	EMB
employees of private company	Pearson Correlation	1	,276
	Sig. (2-tailed)		,114
	N	34	34

This difference between ownership by central or local government and EMBs might be explained by the fact that EMBs tend to have less personnel and therefore need to hire external support staff, but more analysis of the data is necessary in order to offer a valid explanation.

5. Conclusions

The relation between EMBs and technology used in the election process is an understudied area. This paper shows that different countries have chosen different paths when it comes to questions regarding the use of technology, the role of the EMB in the decision-making process, ownership and support on Election Day. Further analysis of the data is necessary in order to draw conclusions on the effect of the use of technology on the independence of EMBs.

What is clear is that EMBs need to be aware of the benefits, but also of the drawbacks of the use of technology, especially when it comes to the possible dependence on private companies that stems from certain choices.

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