



Could on-line voting boost desire to vote? – Technology acceptance perceptions of young Hungarian citizens



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ABSTRACT

In our paper we develop and test the argument that intent to i-vote (to use on-line voting systems) drives intent to vote, while intent to i-vote is influenced by four key attitudes: performance expectation, perception on ease of use, trust in the internet and trust in the government. We show that these findings contradict those which exclusively identified economical, legal, and cultural drivers to enhance democratic participation in the Central and Eastern European region. Rooted cardinally in the Technology Acceptance Model (TAM) six hypotheses were set, and then tested with partial least square (PLS) structural equation modelling. In the context of young, educated and internet-ready Hungarian voters the testing of the hypotheses has shown high level of on-line voting intent and that perception of on-line voting would enhance voting desire amongst young Hungarian internet users. Also, our findings show that performance expectation, perception on ease of use and trust in the internet are positively associated with i-voting intent.

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1. Introduction

Scholars mostly identify macro economical, technological, legal and generally cultural impediments for internet use in political participation in the Central and Eastern European environment (Ifinedo & Singh, 2011), (Dányi & Galács, 2005). In our paper we develop arguments, and show exploratory empirical data, that intent to i-vote amongst young citizens effect political participation, furthermore, trust in technology, expectations of performance improvement, and anticipation of user-friendly solutions drive this intention by overruling the above impediments.

Our research motivation is to contribute to the general discourse on how electronic platforms can change and transform participation behavior of citizens. Theoretically this issue has been raised by Susha and Grönlund who after surveying a large body of e-participation literature have come to the conclusion that research is lacking especially in the intersection of information technology, political science and sociology (Susha & Grönlund, 2012). In this research we not only analyze on-line voting technology's potential impact on voter turnout, but explore the key factors, possible incentives behind future i-voting technology acceptance by citizens.

The site of our study is Hungary, and we argue that this geographical area in Central and Eastern Europe (CEE) is interesting for several

reasons. Firstly because of the relatively low interest in participation during elections which might have serious effect on European democratic representations on the long run. While EU average participation is stabilized at around 41–42% by 2014, CEE citizens' desire to vote in EU parliamentary elections has lowered way below this (Hungary 28%, Croatia 25%, Poland 23%, Czech Republic 18% and Slovakia 13%). So far this low turnout has been investigated by exploring political activities of voters, finding that participation in elections is correlating with generally active public behavior, but issue of technology acceptance has not been assessed (Novy, 2014).

Introduction of on-line or internet voting might seem to be an attractive solution to increase voting intention, not only amongst digital natives but in other segments of society as well. Technologically induced change might result in significant results in turnout. This has been shown and analyzed in (Germann & Serdült, 2014) using the Swiss case of expatriates voting. Similarly Estonian turnout in voting has been increased which is shown for instance using empirical data by (Bochsler, 2010). Specifically, Trechsel and Vassil had demonstrated in a simulation based on analyzing data of four Estonian elections that turnout in the 2009 Estonian local elections might have been up to 2.6% lower in the absence of internet voting (Trechsel & Vassil, 2010).

2. Review of on-line voting concepts, adoption and performance

Impact of modern technology and its adoption in voting has been widely discussed. For instance, access to internet and on-line news increased the probability of voting in the US 2000 election compared to

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1996 by an average of 12% and 7.5%, respectively (Tolbert & McNeal, 2003). The authors also found that the mobilizing potential of the internet in 2000 was also associated with increased participation beyond voting such as more intensive social media use. In our paper we turn our attention toward the impact and adoption factors of on-line voting.

In the following two subsection we clarify the related key concepts and arguments of e-voting literature as a necessary background for the next two subsections of literature review concerning our focal problem: factors of e-voting adoption.

2.1. E-voting and on-line voting

E-voting in its original form is defined as any type of voting that involves electronic means. (Svensson & Leenes, 2003). Although e-voting can be conceived in many different ways, a crucial distinction may be made between electronic machine voting (EMV) and electronic distance voting (EDV). EMV simply refers to the use of any electronic apparatus to record and count votes in a fixed public place. EDV goes a step further in the sense that it implies the electronic registration, culling and counting of votes cast from different locations. It typically allows voters to use a more generic technology such as interactive digital TV, telephone, Short Message Service (SMS) or the internet, to cast their vote from any preferred place (Svensson & Leenes, 2003). Throughout this paper we use the technological concept of EDV and its most advanced version the on-line or internet voting solution (i-voting and on-line voting as synonyms) (Alvarez, Hall, & Trechsel, 2009).

Technology foundations in ICT services provide considerable opportunities for the introduction of i-voting by combining usability and security (Zissis & Lekkas, 2011), and robust design of complex elections models (Fernandez, Red, & Peláez, 2013). On the other hand, development and success of on-line voting solutions differs greatly country by country (Serdült, Germann, Harris, Mendez, & Portenier, 2015). For instance, while the experience in the USA has been limited to individual trials in primary elections (Simons & Jones, 2012), in Estonia the entire electorate can vote on-line in national elections (Alvarez et al., 2009). In several Swiss cantons, pilot schemes were set up in the early 2000s to establish internet voting (Serdült et al., 2015). Norway, on the other hand, stopped its i-voting projects after several trials (Saglie & Seggaard, 2016). Krimmer also gives an account of several experiences with on-line voting in different settings such as in Portugal, Italy and Brazil (Krimmer, 2006).

Although the introduction of this additional voting channel clearly has some advantages, such as reducing costs and simplifying the voting and vote counting processes, i-voting undeniably raises various technical, legal and especially political questions.

2.2. Performance expectations and the complexity of on-line voting adoption

Experiences with i-voting confirm the strong perception for a new way to reach the population and involve those underrepresented in the electorate in the political process. This argument is based primarily on the hope for increased participation of younger voters as they have a higher affinity for the internet compared to other age groups, but a generally low turnout rate (Serdült et al., 2015). On the other hand, in the e-voting context Vassil and Weber argued that there is a unique paradox in conceptualizing technology impact and use (Vassil & Weber, 2009). They show – on a sample of Estonian voters – that technology savvy or „digitally converted” citizens have high rate of on-line voting system use but this has a low impact on their behavior, since technology is seamless for them, it is neither a motivator nor an enabler (Vassil & Weber, 2011). This gives our research the motivation to explore the potential impact of technology on young voters' turnout in a Central and Eastern European context.

2.3. Factors of e-voting adoption

Supposing that e-voting can have a positive impact on voters' turnout, it is important to see what factors affect the adoption of e-voting technologies. Contrary to the approach which has been applied so far to investigate voting intention – which has been age, income and education (Orviska, Caplanova, & John, 2005) – we argue that the TAM (Technology Acceptance Model) enriches our understanding more about on-line voting technology adoption in CEE.

In its original form TAM explains that behavior or attitude toward technology use is determined by the users' perceptions of usefulness and effort (Davis, 1986) and (Davis, 1989). The power of this theory is on the one hand its robustness: of 101 empirical studies based on the TAM model, 74 demonstrated the positive and significant relationship between perceived usefulness and use (Lee, Kozar, & Larsen, 2003). Meanwhile the same has been shown for “ease of use” in the context of internet applications, however it seems to be a necessary but not sufficient criterion of use in the case of non-internet based information systems (King & He, 2006). TAM has already been used as a theoretic framework in e-government (Carter & Bélanger, 2005) and also in e-voting research (Schaupp & Carter, 2005; Chiang, 2009; Choi & Kim, 2012) and found to have a significant explanatory power.

Furthermore, TAM's power lies in its flexibility for extension by other independent variables and thereby positioning it as an ancestor of other more general technology acceptance models such as the UTAUT (United Theory of Acceptance and Use of Technology) model (Venkatesh, Morris, Davis, & Davis, 2003). Although UTAUT has also been used in exploring the factors of e-government adoption (Gupta, Dasgupta, & Gupta, 2008) and e-voting as well (Powell, Williams, Bock, Doellman, & Allen, 2012), Colesca and Dobrica (2008) argue that UTAUT is less useful outside of the context of companies, as two of its six variables are related to technology adoption in organizations.

Diffusion of Innovation (Rogers, 1995) is also a popular model used in information technology adoption research, but e-government researchers argue that some of its core constructs are very similar and comparable to TAM factors (like relative advantage to perceived usefulness and complexity to perceived ease of use; Carter & Bélanger, 2005; Colesca & Dobrica, 2008), while TAM is much more prevalent (Davis (1989) has 30,807 citations while Rogers (1995) has only 540 in September 2016).

2.4. Trust as a major condition for e-voting adoption

Citizens' trust is conceived to be one of the predictors of whether or not, and to what extent citizens engage in participatory initiatives in general, and in e-participation specifically (Wimmer, Scherer, & Appel, 2015). However, Alharbi, Kang, and Hawryszkiewicz (2015) argue, that further research is needed on the impact of trust in the e-participation context.

Firstly, we consider trust in democratic institutions, which entails a subjective cognitive association toward the functioning of courts, municipalities, police, military etc., i.e. whether these institutions operate according to social expectations. Recent Hungarian empirical studies show that on a scale of –100/+100 only the military (+5), police (+3) and the court system (+2) enjoyed positive institutional trust in 2012 amongst Generation Y (the age group of 15–29) (Székely, 2013). The same study has shown a drastic decline in perceived trust in the Constitutional Court (from +24 to –12) and the President of the Republic (from +10 to –18) in the period of 2008–2012.

Trust in e-government can be enhanced by higher perception of technological and organizational trustworthiness, the quality and usefulness of e-government services, and the internet experience (Colesca, 2009). Internet use and citizen satisfaction with e-government combined are positively associated with trust in government (Welch, Hinnant, & Moon, 2009). The similar logic of trust-technology relationship has been identified by (Tolbert & Mossberger,

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