Trust in e-Voting Systems: A Case Study

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Abstract. The act of voting is one of the most representative of Democracy, being widely recognized as a fundamental right of citizens. The method of voting has been the subject of many studies and improvements over time. The introduction of electronic voting or e-voting demands the fulfillment of several requirements in order to maintain the security levels of the paper ballot method and the degree of trust people place in the voting process. The ability to meet those requirements has been called into question by several authors. This exploratory research aims to identify what factors influence voters’ confidence in e-voting systems. A case study was conducted in an organization where such a system has been used in several elections. A total of 51 e-voters were interviewed. The factors that were found are presented and discussed, and proposals for future work are suggested.

Keywords: e-voting, trust, electronic voting systems, e-voting requirements.

1 Introduction

The act of voting is a key part in democracy and one of its cardinal rights. The evolution that occurred in the voting process over times enables present day free elections to be framed in a well defined set of stages and requirements, which when properly implemented and enforced confer the fundamental characteristics of credibility and trust to all involved in the election – promoters, developers, electoral commissions, auditors, and most importantly, candidates and voters.

The method of voting has undergone changes in the various stages that make up its life cycle in order to improve its speed, security, flexibility, availability, and cost, especially during the authentication of the voter, the casting of the vote, and the tabulation stages.

As illustrations of the improvements implemented over time, there is the use of paper ballots, the development of specific legislation to streamline the voting process, and the introduction of mechanical means that made the process faster. In the recent past, we have witnessed the introduction of information technologies (IT) in the voting process, not without ups and downs along the way, seeking the transformation of the traditional voting system (paper ballot) in an electronic voting system.

However, the introduction of these technological elements in the elections has not been easy or consensual, especially with regard to the suspicions that they raise, their ability to meet the requirements that made paper ballot method trustworthy, and to a
set of new questions concerning basic values like the anonymity of the vote and the accuracy of the system.

IT systems are currently used in many sensitive areas of society, such as for processing personal data, clinical data, or financial transactions. However, it seems these areas gather a greater consensus and apparently greater confidence on the use of IT by those involved than the introduction of these same technologies in the voting process.

In fact, electronic voting systems (EVS) are not yet widely used in elections of greater relevance and we observe countries moving forward and backward in implementing EVS for national elections: while some countries are already using EVS for several years, others banned its use. Between these extremes, there are cases of success and failure in the use of EVS [1], [2], [3], [4], [5], [6].

Among the various aspects that may facilitate or inhibit the success of EVS, trust has been recognized as a key factor [7], [8]. Along the quest for a completely trustworthy e-voting system – one that does not lose, add, alter, disregard, or disclose ballots – there is also the need to ensure that voting stakeholders also trust the system really has those properties [9].

The ability to demonstrate that EVS are trustworthy has a direct impact in the legitimacy and acceptance of the voting results, and it may be considered a prerequisite for shifting from the traditional voting systems to the voting systems on the Internet. Indeed, the integral acceptance of EVS must encompass all of society, including all voters and not just those who are predisposed to use them. If there is a large number of voters skeptical about this method of voting, trust in democracy may be compromised [6], [10].

The relevance of trust in e-voting may also be appreciated if one considers the potential goals of a deliberate attack launched against EVS, namely to produce an incorrect tabulation of votes, to prevent electors to cast their votes, to raise doubts about the legitimacy of the results of the election, to delay the promulgation of the results, and to violate the anonymity of the vote [11]. The possibility of any of these goals being achieved or the actual verification of their satisfaction casts a shadow of doubt among the electorate, severely affecting their confidence in those systems.

The belief that trust plays a major role in the adoption and acceptance of EVS as innovative technological systems with social impact motivated the execution of this work. Knowing what instills confidence into electors regarding the use of EVS will help to understand voters’ attitude towards e-voting and to devise better ways to design and deploy these systems.

Therefore, the aim of this study is to identify what factors influence voters’ trust in EVS.

2 Literature Review

2.1 Voting Systems

The voting systems are the means used by people who have the right to vote (the voters) to freely choose between different options.