The paradigm of e-voting: the Mexico City’s situation

Ninfa E. Hernández Trejo*

Introduction

Technological progress is inevitable, new generations are more and more used to handling electronic instruments for various purposes. From that perspective, it is clear that the trend is to perform all of our activities through technology, of course, voting is no exception. E-voting is a current and complex practice that is slowly generating more interest among academics, researchers, specialists and public employees that study it or organize electoral processes.

This paper focuses on addressing the development of this issue in Mexico City, where the project has slowly advanced throughout the 2000s and has been strengthened so as to substitute the traditional voting method. Before describing the eight stages developed by the electoral body of the Mexico City –promoter of the new voting paradigm– which have guided the vote automation project, the term’s meaning will be explained, its modalities and consistency. The worldwide e-voting experience is mentioned, as well as cases that have been successful and those which have failed. The states of the Mexican Republic that have at least debated on the subject are also mentioned.

Lastly, the course of e-voting in the Mexico City is described, its phases, citizen perception and the advantages and disadvantages of using it. All of this in order to know how far along the project is and if it really promotes the strengthening the city’s democracy according to the approach that gave birth to it, which suggests the use of technology in electoral systems as an instrument to develop democracy.

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1. E-voting: what is it? What does it entail?

Voting is the most traditional political participation act which involves a series of conditions: it must be free, secret, unique and non-transferable. Traditionally, citizens have cast their vote by going to the voting polls and marking their choice in the electoral ballot and later depositing their vote in a ballot box. E-voting refers to the use of a new tool to develop conventional function of the election of representatives, and it is a direct result of technological advances. In Mexico—and other Latin-American countries that have made progress in this area such as Brazil, Venezuela, Argentina and Paraguay—there have been other factors that explain the rise of this phenomenon; like the need to increase the system’s overall social legitimacy. In other words, in these places, e-voting also emerges as an adequate cure for an insurmountable string of frauds and violations of their electoral systems.

Voting automation is then, the application of information and communications technology devices and systems to the act of choosing; thus, it can be used in the stages that take place the day of the elections, voter registration, citizen vote, counting of the votes and transmission of the results. It is important to point out that the modalities of this technological resource are considered according to worldwide implementation experiences; there is a way to classify it:

- Remote or online e-voting: involves the use of personal computers with Internet, digital television and cell phones. Citizens vote anywhere; they do not need to go to a polling booth.
- Face-to-face or offline voting: citizens attend polling booths to cast their vote through technological-computer devices, such as electronic ballot boxes, magnetic cards, optic readers or electronic ballots.

Many countries one way or another have already considered automation voting options; some of them have conducted pilot tests to know the proposal’s viability, others already use a form of binding e-voting. Thus, each country has had its experiences and their successes and misfortunes greatly impact the perspective on the subject.

Countries that have used technological voting mechanisms successfully—in the sense that they have moved forward and in some cases have

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substituted the traditional voting method—are Spain, France, Belgium, Argentina and Brazil. The latter implemented this project in 1993; in 2008 almost 14 million citizens voted using electronic ballot boxes⁴; they have even considered substituting these for biometric ballot boxes. It is expected that by 2018 Brazilian voters will be able to vote using the latter, which confirm the citizen’s identity through fingerprints, they also store the results in three different disks and automatically print the scrutiny act when the Election Day comes to an end⁶.

On the other hand, there are cases where the use of these new mechanisms have been questioned; instead of ensuring greater legitimacy to the voting process, there is a lack of legality and certainty because the voting results issued by these have been doubtful; there are two important examples: Venezuela and the US. In 2006, the Venezuelan polling booths that had electronic ballot boxes took longer to report their results than the ones that used traditional voting systems⁵. The presidential election experience of 2000 in the US showed the weaknesses of e-voting; especially in the state of Florida, which used a ballot perforation system, due to the imprecise markings there were problems related to the issuing of the results⁶.

Undoubtedly, each case has been an example for the states of the Mexican Republic and its capital which have seen worldwide e-voting progresses and now know the scope and limitations of these resources; its “pros” and “cons”. This will be explained further on the following paragraphs.

2. E-voting in Mexico

In Mexico, the type of e-voting that has been promoted is the face-to-face one, except in Chihuahua and Mexico City where the online model has been also used. In Chihuahua, there was a pilot test during the 2007 elections that included three components: traditional voting, i-voting and electronic ballot box voting. The country’s capital—besides having an electronic ballot box project—in the 2012 elections promotes i-voting for citizens

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⁶ Idem.
living abroad to elect the city’s mayor (head of government) through the program launched by the Federal District Electoral Institute (IEDF) called “Vota Chilango”.

Coahuila, San Luis Potosí, Jalisco, Nuevo León, Estado de México, Baja California, Chiapas, Michoacán, Veracruz and Campeche have also debated issues related to e-voting projects. It is worth mentioning that the seven states that we first mentioned, have already introduced a special section in their electoral codes and laws. It is also an important fact that in almost every one of them, except Michoacán, their electoral bodies launched the e-voting project initiatives and promoted them to analyze the feasibility of alternate electoral organization and forms of voting, to try and make electoral and citizen participation processes more efficient; taking into account the exam and study of international experience regarding voting automation.

Coahuila is the state that has the most advanced project; its main premise is where e-voting has occurred, paper voting cannot return. Ever since the birth of voting automation (2001), there have been five generations of e-ballot boxes prototypes; budget appointment for this mechanism has separated this state from the others. Baja California, for example, has not been able to effectively consolidate it projects due to the lack of resources; other states’ projects are at a standstill due to different reasons, especially lack of money.

The Federal Electoral Institute (IFE) has also designed nationwide modernization programs for electoral processes which have been the result of the demands made by political parties to help build confidence in electoral organization and use technology as a resource to make electoral organization tasks more efficient and effective; but also to build institutional confidence. In our country, there have been unsuccessful initiatives; one of them on December 13th 2002 when Luis Alberto Rico Samaniego, senator for the state of Coahuila, presented before the Senate an initiative to reform the Federal Code of Electoral Institutions and Procedures (Código Federal de Instituciones y Procedimientos Electorales (Cofipe)). […] It entailed the inclusion of a ninth book to the substantive electoral law, which regulates citizens’ voting abroad through electronic voting centers outside the country.

In general terms, he intended to establish (the term “electronic ballot box” appeared) electronic voting centers in northern US counties where most

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7 Ibid., p. 82.
of the Mexican population is concentrated so as to capture the vote of citizens living abroad. The second transitory article of this proposition asserted that e-voting for Mexicans residing abroad could be implemented in the 2006 federal elections, this happened, de facto, via postal vote and never electronically⁹. Postal vote failed, the innovative initiative of Rico Samaniego was unsuccessful.

Recently, IFE created a temporary commission that has to determine if the use of electronic voting instruments is feasible; it suggested that the Chamber of Deputies vouch changes to legally conduct a pilot test, with binding effects in 2012, for the election of senators¹⁰. The intention is to install electronic ballot boxes to conduct the 2012 elections.

It is important to note that these types of projects progress slowly, the building of confidence, optimizing of electoral processes and making sure they work properly is a priority for their promotion –especially for Mexican states that want to implement this process--; said procedures are the most direct way individuals have to participate and legitimize their opinions and political decisions and exercise their political rights as citizens.

Similarly, in Mexico City, e-voting has a fundamental premise for its implementation and development; the use of technological means should ensure procedural principles and safeguards which are typical of democratic States. Now we need to know if this premise has been effectively fulfilled by going through the stages of the project, citizen perception regarding this issue, strengths and weaknesses of the automation of e-voting; all of this to answer the following question: does e-voting contribute to the strengthening of the capital’s democracy?

3. E-voting Project in Mexico City

The way citizens cast a vote entails a difficult task for the competent body authorities, one of their main functions is the innovation of procedures and organization, direction, control and validation techniques for the elections¹¹. E-voting in Mexico City is a product of these tasks.

Since 2000, the IEDF –electoral authority of the body in charge of organizing the elections and citizen participation procedures– has carried

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⁹ Ibíd., pp. 183 y 184.


out some actions so as to investigate electoral procedures automation options, cost reductions and voters’ confidence permissibility by analyzing various technologies used in other countries. This was consolidated in a project that focused its attention on the electronic ballot box; thus, since 2001 the Institute set out to create an easy-to-handle, reliable and secure prototype that preserves the essential characteristics of voting and that could be used not only in electoral processes, but in citizen participation processes too\textsuperscript{12}. Overall, the electoral body has developed this project in eight stages, which will be explained in the following pages.

\textit{a) E-voting stages in Mexico City}

In the first stage, the city’s electoral institution got familiar with the subject and an approach of the use of technology in electoral systems as a tool for democratic development was born; this is why it is important to consider and promote technical advancements that have been developed all over the world. In this stage, since 2000, the Executive Direction of Electoral Organization and the Informatics Unit of the IEDF, supervised by the Electoral Organization Committee; visited national and foreign electoral bodies to study methods used in electoral processes and citizen participation procedures. In Mexico, work meetings with local electoral bodies took place in Baja California Sur, Chihuahua, Jalisco, Morelos and Tlaxcala; because these states considered aspects related to plebiscite and referendum organization in their electoral legislations, or because they had federal concurrent elections during the year 2000\textsuperscript{13}. On the other hand, electoral bodies in Brazil and Venezuela were selected because of their important technological advances in electoral automation processes issues. These visits promoted the exchange of inter-institutional information; these electoral bodies also provided social and legal analysis in this regard.

In 2002, the IEDF sent communiqués to different manufacturers of electronic voting systems and from their responses expressed interest in developing a pilot test. The same year, it organized lectures with e-voting specialists that focused on the experiences in Brazil and some US states\textsuperscript{14}. Subsequently, in 2003, the pilot test was approved using the Brazilian electronic ballot box model, this initiated the second stage of the project.


\textsuperscript{14} Dirección Ejecutiva de Organización Electoral, \textit{Informe Anual de actividades correspondiente al año 2002, que presenta el Secretario Ejecutivo}, IEDF, México, 30 de enero de 2003, p. 87.
So, a loan agreement for 150 electronic ballot boxes was signed with the Superior Electoral Court of Brazil (TSEB); 120 of them were distributed in sets of three to each uninominal local electoral district in Mexico City, 20 were used to train Mexican technicians and develop diffusion activities and 10 of them were used to cover possible eventualities; for the local 2003 elections. Three work groups were constituted within the IEDF to monitor all matters related to the drill: the Operations Group (in charge of planning activities); the Monitoring Group (in charge of knowing detailed information about the project’s development) and the Technical Group (in charge of informatics and telecommunications acts).

Two exit questionnaires were developed to know the citizens’ opinion of this drill; advice was sought from the National Autonomous University of Mexico (UNAM), the Metropolitan Autonomous University (UAM), the National Polytechnic Institute (IPN) and the Technological Institute of Superior Studies of Monterrey (ITESM) Mexico City campus. The places where the electronic ballot boxes were installed were big, well-lit, covered with a roof and with several outlets, which also allowed easy access to disabled and senior citizens.

The day of the election, at 8.45 in the morning, 100% of the electronic ballot boxes were in place, their distribution is shown in Table 1. The main issue submitted for consultation was the citizens’ of Mexico City political party preference in decreasing order; there was a “no political party” option and the possibility to correct the chosen option before final confirmation. Once the procedure was finished, the registry system was closed for the citizen, to prevent them for participating more than one time.

Table 1

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<tr>
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The average time to cast a vote was about a minute. The number of people that participated in the pilot test was 23,059; 41.92% of the 56,538 citizens that voted in the Federal District Legislative Assembly (ALDF) 2003 election for deputies\(^{15}\). After the citizens voted in the electronic ballot boxes, one of the questionnaires with three closed questions was given to them; days after the election an extended questionnaire was administered to a sample of the people who participated in the drill; questions relating to the use of informatics technology were included. The results of these tests will be later analyzed to have a general overview of the perception the citizens of Mexico City have of voting automation.

On the other hand, the places electronic ballot boxes were placed in closed between 18.00 and 18.30, most of them (114) closed between 18.00 and 18.15. During this pilot test, thirteen contingencies were registered, the most important ones were: due to the lack of electricity, seven electoral sections had to use internal backup batteries; one electoral section had to use an emergency electronic ballot box; and in some sections, electronic ballot boxes were taken to the district direction headquarters to retrieve the data.

Despite this, the three groups in charge of monitoring the preparation and development of the pilot test agreed with the diagnosis: it was a success. This exercise was conducted according to the project approved by the General Council; thus, the IEDF concluded that the opinion regarding political parties and citizens’ use and functioning of electronic ballot boxes was known; it also confirmed that voting through electronic means is a

\(^{15}\) Instituto Electoral del Distrito Federal, *Informe sobre los resultados obtenidos por la prueba piloto de la urna electrónica* (INF-50-03), Comisión de Organización Electoral, México, 30 de septiembre de 2003, p. 20.
secure and reliable way to vote. Furthermore, the use of electronic ballot boxes as a way to improve voting, transmission and results’ diffusion times was verified. Security measures of this electronic mechanism ensured the vote’s secrecy and the results were protected; lastly, the equipment and programs’ ability to be audited was known\textsuperscript{16}.

In the third stage of the project, the Institute’s General Council had a meeting on October 28\textsuperscript{th} 2004; it predicted that the e-voting mechanism would be feasible if the ALDF approved reforms to the Electoral Code of the Federal District (CEDF) which authorized the reception and counting of votes through electronic ballot boxes, in the territories authorized by the Institute. Thus, on September 30\textsuperscript{th} 2005 some changes were made to the CEDF, these were published on June 21\textsuperscript{st} 2006 on the \textit{Official Gazette of the Federal District}; the use of technological instruments was approved; the president minister of the District Council informed the Government, Delegation Chiefs and Deputies of the Legislative Assembly\textsuperscript{17}.

The fourth stage entails the design of the electronic ballot box prototype of the IEDF. It is important that in September 2004, the “Symposium regarding electronic ballot boxes in citizen voting” took place; its goal was to make a detailed analysis of voting automation. Another important fact is that various collaboration agreements were made between the Informatics Unit of the capital’s institute and the UNAM, UAM, IPN and ITESM; the latter would develop technical specifications and model construction. This way, the development of the equipment would be reliable; the development would be in charge of educational institutions that do not adhere to any political party. Three work groups were formed again (Procedural and Normative Development, Technical and Information and Technical Monitoring), some keynote speeches took place (“E-democracy and citizen participation; the example of public consultation: Madrid participa” and “Electoral System in the US and transparency mechanisms”) to obtain information regarding social, legal and technical aspects of the use of technological tools in the voting of these countries.

In December 2004, prototypes of the electronic ballot boxes designed by higher education institutions were presented to the media; these boxes were delivered to the Informatics Unit between the months of January and February 2005. The models had to have the following requirements: they should ensure universal, free, secret, direct, personal and non-transferable characteristics of voting; allow voting to be easy and quick; use of mechanisms to identify the voter; be of easy installation and maintenance; allow the successive casting of votes in the different elections established in the Code; prevent citizens from voting a second time; allow voting corrections; allow the emission of proofs of installation and booth opening, closing of the vote, computed results and booth closing; include


\textsuperscript{17} \textit{Gaceta Oficial del Distrito Federal}, No. 71, 21 de junio de 2006.
mechanisms to make voting easier for handicapped people; reduce procedural costs in the casting and counting of votes; among others.18

Later, from February 4th to the 18th, said Unit developed an electronic ballot box proposal based on the prototypes of the four institutions. On February 25th, the Organization and Electoral Geography Commission got to know the institutional ballot box design and authorized the production of 60 equipments according to the aforementioned characteristics. Lastly, this design was presented to the General Council on March 2nd 2005.

The physical characteristics of the semi-industrially manufactured IEDF instrument: it weighs almost ten kilograms and can operate on a portable battery for up to twelve hours (the electoral day only lasts ten hours); it has a Linux operating system and Intel-developed processors with optimal functionality of 400 MHz; it also has bank-like locks that allow the system to start operating; touch screen to make a choice through virtual electoral ballots and correct the chosen option; it prints a proof –receipt– (unlike the Brazilian e-ballot boxes); it has an integrated audio system and a Braille keyboard for the disabled. Figure I shows the e-ballot box model of the capital’s electoral institute with all of its external components.

Figure I.
Prototype of the electronic ballot box of the Electoral Institute of the Federal District


18 Comisión Permanente de Organización y Geografía Electoral, Informe presentado por la Organización y la Comisión Permanente de Geografía Electoral del Instituto Electoral del Distrito Federal sobre el avance en el diseño de una caja de e-votación para emitir su voto, de acuerdo con los acuerdos de la máxima que rige órgano del Instituto el 3 de octubre de 2003 (ACU-696-03) y 23 de marzo 2004 (ACU-01-04), México, IEDF, pp. 6 y 7.
Regarding the operation of this electronic ballot box, the user does not have to have any previous computing knowledge; this design is planned for ordinary people that have had contact with certain technologies such as telephones or ATMs. Furthermore, this model helps disabled people, not only because it is a portable device and has a touch screen, but also because it is equipped with headphones and sensitive touch buttons, this makes voting easier for the blind, the illiterate and people that do not have prior knowledge of the Spanish language. This equipment also works only through two special codes, one to start it up and one to shut it down; the only person that has access to this code is the president of the ballot box table. It also avoids duplication of votes, efficient counting and if the ballot box is stolen, unauthorized persons cannot access the information.

Each one of these ballot boxes costs 60,000 Mexican pesos. With 60 ballot boxes a new voting drill was planned for the July 2nd 2006 election; this is the fifth stage of the project. The exercise included a 3-question public consultation regarding civic-democratic issues. Each uninominal district in Mexico City (40 in total) received a ballot box and the extra 20 were saved for emergencies. The day of the election, 13% of the citizens registered in the nominal list (Table 2). The time used to cast a vote was between 26 and 75 seconds (73%); the exercise proved that the process speeds up by using an electronic ballot box instead of a paper ballot.

<table>
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</tr>
<tr>
<td>Electronic Ballot Box</td>
<td>5,824</td>
</tr>
<tr>
<td>Participation percentage in the electronic ballot box</td>
<td>13%</td>
</tr>
</tbody>
</table>

Table 2
Participants in the pilot test


Like in the previous exercise, an exit questionnaire was delivered to the voters and it had three questions regarding the ballot box’s functionality. During the election, 17 eventualities took place, the ones worth mentioning: in District IX, the ballot box was not ready on time because of organization problems among the booths’ members; in Districts IV and XXII, on two occasions, the pressing of the button made the machine skip to the second question; in District XXXIX an emergency ballot box had to be used because the first box stopped at the first question and would not continue

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with the process; among others. No case involved loss of information\(^{22}\), most of the problems had to do with human mistakes and not e-ballot box malfunctions; a considerable advantage from this voting mechanism. Overall, this exercise cost 4,600,000 Mexican pesos, paid by the IEDF\(^{23}\).

The aforementioned information corresponds to the first exercise made with said ballot boxes; the other actions correspond to the sixth stage of the e-voting project in the Federal District, which entails the diffusion of the equipment belonging to the Institute to other administrative-electoral bodies, political parties and citizens. It is worth mentioning the time 60 ballot boxes were lent to the Elections and Citizen Participation Institute of Chiapas to be used in the August 20\(^{th}\) 2006 elections; an exercise regarding non-binding civic and democratic values.

On the other hand, in 2007 other exercises were carried out with these electronic ballot boxes, public consultations in 14 delegations of the capital, elections based on the three aforementioned aspects and arranged by the Electoral Institute of the State of Chihuahua\(^{24}\); the loan made to the government of Mexico City for the Green Consultation (Consulta Verde) which measured environmental policies in the capital; and also for the PAN exercise to elect delegational leaders through the electronic mechanism\(^{25}\).

Subsequently, in 2008, the IEDF loaned the ballot boxes for a process to verify the energy reform in Mexico City and also for another PAN exercise in the State of Mexico. Furthermore, that same year, the IEDF collaborated with some universities that borrowed the equipment to choose their student and academic leaders\(^{26}\).

In the seventh stage of the project, on January 10\(^{th}\) 2008 changes made to the Electoral Code were published, these reforms will regulate the use of electronic mechanisms in electoral processes in the second title (Electoral

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\(^{24}\) In this application the first binding exercise for the authorities took place, for both the Electoral Institute of the State of Chihuahua and the Ministry for Public Education, elementary kids expressed their opinion regarding civic and democratic values. It was an interesting exercise because it recorded a lower voting time, these kids had a 25 second average voting time; in a traditional process average time was a minute and a half. Fernando José Díaz Naranjo, “Sistema de votación electrónica”, in *Memoria. Democracia, participación ciudadana y justicia electoral. Reflexiones y retos derivados del proceso electoral 2008-2009*, México, IEDF, 2010, p. 69.


\(^{26}\) *Ibid.*, pp. 70.
Processes), chapter 1, section 2 –called: Use of electronic voting systems– that includes articles 213, 214 and 215. The latter established, among other things, that the IEDF would use electronic voting systems as long as they ensure voting effectiveness and authenticity; it also establishes the General Council as being responsible for specific programs and projects, budget and everything related to e-voting; it also established the electoral software’s characteristics and that said electronic systems have to print a receipt for every vote cast27.

The most recent amendment to the CEDF was introduced in 2010 and it brought certain changes regarding e-voting mechanisms. All the information concerning the latter is included in the sixth title (Election Day), Chapter VI (E-voting) and only includes article 362 of the Code of Institutions and Electoral Procedures in the Federal District (CIPEDF). Current regulations include operating rules for the use of electronic instruments; looks to ensure the secrecy of the vote; points out that those voters that cannot read or are physically unable to use the electronic device that receives votes at the polls can be helped by a person they trust. Overall, it concerns itself with everything related to an election day carried out with traditional voting mechanisms (polling booth location, designation of the members of the Board, vote reception, Nominal List consultation, closing of the voting process, scrutinizing and counting of votes) but obviously adapted to the characteristics offered by electronic resources28.

Finally, the last stage includes the binding e-voting exercise carried out in the 2009 elections; thus, results recorded by technological mechanisms did influence the election. Forty electronic ballot boxes, one in each electoral district, were distributed throughout the electoral sections mentioned in Table 3. For the first time in the history of Mexico City, the IEDF carried out, simultaneously, elections with traditional and electronic mechanisms. It started at 7.30 in the morning; 37 polling booths installed their electronic ballot boxes without any problems, the other three (XI, XIII and XXXV) some eventualities had to be solved before the voting process could start, it was necessary to change equipment29.

Table 3

Electoral Sections where the electronic ballot boxes were installed

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<tr>
<td>VIII</td>
<td>1,610</td>
<td>XVIII</td>
<td>3,399</td>
<td>XXVIII</td>
<td>2,347</td>
</tr>
<tr>
<td>IX</td>
<td>4,996</td>
<td>XIX</td>
<td>2,104</td>
<td>XXIX</td>
<td>2,627</td>
</tr>
<tr>
<td>X</td>
<td>4,592</td>
<td>XX</td>
<td>3,424</td>
<td>XXX</td>
<td>613</td>
</tr>
</tbody>
</table>


There was a 43.28% average percentage of participation of registered citizens in the nominal lists that voted in the polls that had an electronic ballot box; District XIII had the lowest percentage (27.33%) and District XXIV had the highest one (58.45%). The eventualities were:

- The electronic ballot box had problems printing voting receipts, help had to be sought from the Technical Unit of Informatics Services (UTSI) its staff solved this eventualty.
- The replacement ballot box printed June 5th as the date and its battery was dead, the UTSI solved this by plugging in the ballot box and resetting the date.
- The replacement ballot box did not print the check list reports; thus, voting could not take place. This situation was solved by the UTSI by configuring the system again.
- The electronic ballot box had trouble printing voting receipts, so it was replaced by a contingency or emergency ballot box. This happened in two districts30.

It is worth mentioning that the PRI asked for a trial to contest the results of the election of the delegational leader in district XXXIV in Milpa Alta31. On August 4th, the Electoral Court of the Federal District (TEDF) decided to make a partial recounting of the votes cast in 68 polling booths. Said booths belonged to section 3,122 that used electronic ballot boxes; necessary actions were taken to recount, scrutinize and inspecting the ballot box. The

30 Ibid., p. 40.
results of the manual count and the ones given by the software processes were identical, so there were no major problems.

In the next subsection, we will see the results of the surveys carried out on the day of the election to determine the level of acceptance of electoral voting instruments, which will be compared to the ones of the 2003 and 2006 pilot tests. It is also worth mentioning that recently the IEDF intended to purchase a thousand more ballot boxes, industrially manufactured, for the 2012 elections; this initiative did prosper because the invitation made to some companies to participate and design a new model of e-ballot boxes was not successful; none of them presented a prototype. The idea is not to abandon the project, despite what happened there is still a desire to establish e-voting, at least in the “Vota Chilango” program mentioned earlier. This would be a new stage of the project.

b) Citizens’ perspective on e-voting

To analyze the way the capital’s citizens view e-voting, I will take as a point of reference the results of the exit questionnaires carried out during the 2003 and 2006 elections and the survey done in the 2009 first binding e-voting experience. The purpose of developing this point separately is to include the citizenry’s opinion that used the electronic ballot boxes in each moment and draw a conclusion of the voters’ perception regarding this issue.

In 2003, two questionnaires were applied, one during the day of the election and the other one several days after the election. The first one was answered by 22,713 people which is 98.5% of the people that participated in the pilot test; 12,085 (53.21%) were women and 10,628 (46.79%) were men; the average age was 41 years\textsuperscript{32}. Regarding the occupation of the people who participated in the pilot test, the most recurrent one was housewife and independent professionals (67.44%). Regarding levels of education, the highest level was university graduates (33.74%), followed by high school level (18.82%) and middle school level (17.06%).

The answers in the exit questionnaire yielded the following results: 22,473 (98.94%) citizens said the use of the electronic ballot box was simple; 22,388 (98.60%) thought the instructions were clear; finally, 21,050 (92.68%) people expressed their approval for their use in elections of Mexico City\textsuperscript{33}. Evidently, these results show a high level of citizen acceptance of the electronic mechanism used in the exercise, and they also recognized it is easy to use.


\textsuperscript{33} \textit{Ibid.}, p. 27.
The second questionnaire which was conducted days after the day of the election, 631 people who had participated in the July 6th 2003 pilot test answered these questions. 338 citizens were women and the other 293 were men. This questionnaire had 15 open and closed questions that had to do with the citizens’ contact with technology (telephone, computer, ATMs); the experience of using the electronic ballot box; voter’s trust or distrust of this technological instrument; voter’s acceptance or rejection of its use in other elections of Mexico City; basically, change the traditional way of casting a vote to insert new mechanisms. 70.84% of the interviewed people said that the current voting system should be changed; only 29.16% thought it should remain as it is. On the other hand, 74.64% of the interviewed people agreed to the use of an electronic ballot box in Mexico City’s elections; finally, talking about the advantages of using the technological instrument, 55.47% think it is an agile, fast and efficient mechanism.  

The results of the July 2nd 2006 test pilot questionnaire showed 5,821 citizens answered it (out of 5,824 people that participated; which is considerably less than the number of participants in the previous test). A little bit more women participated (51.1%); most of the people can be classified as young or young adults between the ages of 18 and 39. The level of education that was most common was university graduate (43.9%) and most of the interviewed people said they were employees (29.4%), followed by businessmen, professionals and self-employed workers (27.9% total).  

The analysis of the answers yielded the following results: nine out of ten citizens (90.4%) agreed with the use of electronic ballot boxes for future elections. Furthermore, 98.4% felt it was easy to use e-ballot boxes and 96.1% of citizens said the instructions to use the technological instrument were clear. These percentages are very similar to the ones yielded by the 2003 questionnaire. The difference in percentage is 2.28 regarding the use of e-voting in future elections; 2.84 regarding how easy it is to handle it and 2.1 regarding clear instructions. Graph 1 shows a comparison between results.

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34 Ibíd., p. 28.
It is interesting to note that all of the aforementioned variables (age, occupation, level of education and gender of the interviewed people) are not significantly correlated to the use of technological elements; and more importantly none of them determine a favorable or unfavorable opinion regarding the use of an electronic ballot box in future voting processes in Mexico City. This means that neither sex, level of education, occupation, or age are factors that determine the acceptance or rejection of the use of technology or the use of electronic ballot boxes, as reported by the electoral institute of the country’s capital36.

According to the surveys of the July 5th 2009 elections, which were made to determine the level of acceptance of e-voting instruments, the results show that “90% of the participants felt it was easy to use the ballot box, and over 80% accepted the use of an electronic ballot box in the elections, awarding it a level of confidence between 7 and 10 percentage points on a scale from 1 to 10” 37. Overall, the capital’s voters level of approval regarding voting automation mechanisms is high, according to the IEDF numbers.

It is worth mentioning that this paper solely focuses on Mexico City; taking into account its characteristics as basic facts to conclude this subsection. It is characterized by its industrial expansion and its high population

concentration. It is also a completely urbanized region, the people who live there are mainly engaged in tertiary activities; that is, those in which the use of computers and electronic devices is commonplace. It is also the state that has the highest number of houses that have a computer (37.2%).

The nation’s capital is a Cosmopolitan city; its population is better prepared than the rest of the Mexicans—according to official information—; therefore, it is not difficult to imagine this people have access to technology and this could be the reason why they agree to the implementation of an electronic ballot box. Perhaps this situation would be different in another state of the Republic; however, the capital’s voters have made positive changes. Public acceptance of electronic ballot boxes in electoral processes and citizen participation in Mexico City could be circumstantially related to culture, traditions and customs, and the voter’s environment; therefore, it could be a decisive factor in future elections.

c) Strengths and weaknesses of e-voting in Mexico City.

The strengths can be seen in the following list:

- Electoral results are obtained more accurately and in a much more timely fashion with an electronic ballot box.
- It is an easy-to-use voting mechanism according to the survey results conducted to know public opinion.
- In the medium-term, budgets savings would follow the non-use of electoral ballots\(^{38}\).
- In the long-term, there could a be a reduction of electoral training costs; if e-voting becomes widespread scrutineers would not be needed, given that the electronic ballot box generates an automatic registry of the voting.
- In an electronic ballot box, the results are viewed on a touchscreen and it also prints a voting receipt; if the process is audited or the results are contested, the jurisdictional authority can manually count each and every one of the votes.
- This electronic mechanism also allows the institute to use it not only for electoral processes, but also for citizen participation ones.
- It allows citizens with disabilities (visual or auditory) to vote; the ballot box has a Braille mask and headphones that guides citizens when casting a vote.
- It could also promote voting for citizens living abroad.

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\(^{38}\) Electoral ballots cost several million pesos; however, we still have to take into account the cost of posters, scrutiny and counting documents, documents drawn up by the Council, control booklets, etc. We also cannot forget stationary and electoral documents and electoral materials which are very expensive and tend to be even more expensive as the electoral process approaches. Fernando José Díaz Naranjo, 2010, *Op. Cit.*, pp. 72-73.
The following sentences illustrate the weaknesses:

- It could generate unemployment; a lot of people that work in the electoral process run the risk of being fired or cease to be employed.
- In the short run, the electronic mechanism is very expensive. Hardware and software are both very expensive, considering also the total cost of the ballot box, as well as maintenance, licensing, support and staff training.
- Until now there has been no doubt regarding the e-ballot box's safeguard of electoral information, there is no reason to distrust it; however, voting privacy and secrecy cannot be 100% ensured.
- The electronic ballot box of Mexico City does not allow voters to write the name of unregistered candidates or cast blank ballots in any election. This is one of the most important weaknesses of this mechanism, it does not offer all of the alternatives traditional voting does and it also limits the citizens' political expression options; although these options were not considered by Mexico City's Electoral Code.

It seems that the technological instrument has more advantages than disadvantages; therefore, it could strengthen rather than undermine the democratic system; seeing that it aims to make the voters trust not only the results—which are known on the day of the election–, but also the electoral authority. It is also a fact that any e-voting disadvantage or difficulty can be overcome if each one of the agents of change puts forth willingness and effort: authorities, political actors, companies and society; united by an efficient democratic system.

Conclusions

Elections and democracy are not synonyms; nonetheless, the first ones are still an important element not only to establish democratic governments but also as a prerequisite for further democratic consolidation. Following this train of thought, we have seen that e-voting development emerges as an adjustment to the needs of current political life. In other words, the tendency to adapt electoral phenomena to new social demands and the complexity of current times can come hand in hand with the implementation of technological advances to them, while preserving the core elements of voting.

We also know that there has not been a single complaint—citizens or political parties—against the use of electronic ballots in the time it has been operating in Mexico City; therefore, it can be speculated that the elections have greater credibility, and there is also the electoral process is regarded as highly reliable. It is important to note Seymour Martin Lipset's two hypothesis found in his book *Political Man*, the first one reads: “the
more prosperous a nation is, the greater the possibilities to maintain a democracy”, this can be associated with the next hypothesis, “the stability of any democracy depends not only on economic development, but also on the efficiency and legitimacy of its political system”39; we could infer that the answer to the aforementioned question (does e-voting contribute to the strengthening of the capital’s democracy?) is affirmative. Nonetheless, the capital’s e-voting experience is not enough to say this; this mechanism has still a long way to go. Some of the project’s goals (like the desire to purchase a thousand electronic ballot boxes) have been unsuccessful for various reasons; most of the time these relate to budgetary reasons. Thus, the project has come to a standstill or has not had the advances the IEDF (its promoter) would want it to.

Despite this, every stage of the project that has been carried out has been successful, this has allowed significant progress; one of them is the fact that e-voting is already a reality in Mexico City and it takes place within the legal framework and the state regulates it. The only thing left is to keep promoting e-voting automation to make it grow even more; because there is no doubt that this mechanism –despite its weaknesses– is a new way to express ourselves and politically participate, capable of providing more benefits than disadvantages by using it instead of traditional paper voting.

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Comisión Permanente de Organización y Geografía Electoral, Informe que presenta la Comisión Permanente de Organización y Geografía Electoral del Consejo General del Instituto Electoral del Distrito Federal.
sobre el avance de las acciones realizadas para el diseño de una urna electrónica para el ejercicio del voto de los ciudadanos, establecidas en los acuerdos del máximo órgano de dirección del Instituto del 3° de octubre de 2003 (ACU-696-03) y 23 de marzo de 2004 (ACU-01-04), IEDF, México.


Gaceta Oficial del Distrito Federal, No. 71, 21 de junio de 2006.

