



# Electronic Vote for the Senate during COVID-19 Pandemic

August 2020

Research Paper for the Forum for Development and Human Rights Dialogue

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# Introduction

Electronic voting is one of the systems adopted for voting in general elections in several countries. However, this system is not in place in many countries, and even in the countries that adopt it, it is often employed in part. The emerging COVID-19 pandemic has brought remarkable changes in all areas and reinforced trends or phenomena that already exist. Electronic voting appears to occur under these emergency conditions as the only solution to holding elections and not postponing them.

The electronic voting system includes many forms, but the most important are two types; the first depends on the way the number of votes recorded on paper is counted electronically and the second type depends on the use of computers to count votes automatically without the use of any papers, the so-called direct electronic voting system, which is applied through online voting according to set standards to prevent fraud. It is done by voters marking directly through a touch screen or by pressing certain buttons on an electronic. Voters' data is recorded on computers at polling stations, and at the end of the voting period, the data is collected in a central agency for counting devices.

There is a range of advantages for the electronic voting system, most notably that it helps to double the number of voters, as it allows the voter to participate in the electoral process at home, or during his daily work. Additionally, it helps to save the costs of the voting process, where paperwork is cancelled, which also reduces the number of workers in the electoral process, especially at the computer screening stage. Furthermore, many believe that the system limits fraud.

However, there are flaws to the electronic voting system, the most prominent of which is the possibility of electronic manipulation of results through piracy. This system depends on the





need for the necessary technological infrastructure from the internet to equip polling stations, which are not available to many countries of the world.

This problem with the electronic voting system appears to have been the reason for the postponement of many elections during the current phase in which the emerging COVID-19 pandemic threatens all countries without exception. For example, on March 13<sup>th</sup>, British Prime Minister Boris Johnson decided to postpone the local elections scheduled for May 7<sup>th</sup> for a year. In Chile, the parliament decided to postpone the referendum on the new constitution for six months, announcing the referendum on October 25<sup>th</sup> instead of its scheduled date on April 26<sup>th</sup>. In Iran, the Guardian Council announced the postponement of the second round of elections for the eleventh session of the Shura Council to September 11<sup>th</sup>, after it was scheduled for April 17<sup>th</sup>.

This prompted the Egyptian Coalition for Human Rights and Development to draft this research paper to highlight the importance of electronic voting as an urgent necessity in the time of COVID-19. The paper discusses several ideas; it begins by introducing the definition of the electronic voting system and presents the criteria that must be available to start the process. The paper then elaborates the advantages and disadvantages of electronic voting and reviews the methods of electronic voting and the experiences of some countries in that process as well as the importance of electronic voting for Egyptians abroad. The paper finally concludes with a set of recommendations that can contribute to that process.

# • The Concept of Electronic Voting

Elections are no longer held traditionally as people have been familiar with for many decades. They are like any other area of contemporary life, in which technology has entered and played a key role in. Citizens can now cast their votes at home, work or anywhere in the world.





Elections are no longer limited to going to the polling stations and voting through traditional papers that are placed in special boxes. The experiences of many countries have proved that citizens can practice their right to vote electronically through multiple, easy and simplified ways, reflecting the development of our contemporary world and the entry of electronic technologies in all its aspects. This has placed multiple systems before the electoral departments from which they can choose which system is appropriate to apply according to their needs based on the type of elections intended to be completed, and the political, social and economic conditions that exist in that country.

Before addressing the definition of electronic voting, we must shed light on electronic elections, which means the use of information technology in the various stages of elections including voter and candidate data registration, voter ID verification, electronic voting, and finally electronic counting of votes. Under the integrated electoral system, all these procedures are carried out without the use of traditional methods of processing them. Electronic voter registration through databases is the first step in each electronic electoral system. However, the introduction of voter data does not mean that electronic voting can be directly implemented because the introduction of electronic voting needs to be made parallel with many adjustments in several areas, many of which may be outside the scope of the electoral administration itself. Generally, electronic electoral tables are prepared so that citizens can directly have their political rights to vote. Election administrators have often adopted two main types of technology in the electoral process:





- Databases (voter registration regulation)
- A geographic information system (GIS) for constituency redistribution and logistical planning

Electronic voting is the exercising the political right to elections and selecting candidates through the use of information technology instead of traditional methods such as ballot papers and ballot boxes, and then storing the results in computer systems according to certain technical and security standards to achieve the highest levels of transparency, accuracy and security, which ensures the integrity of the electoral process in its electronic form. Others define it as all electronic means that can be used to activate voting and tabulation of votes, including all means and electronic systems that are used to complete the electoral process. Some argue that it is a term that includes many types of voting, including electronic means of voting, casting votes and counting them. Thus, electronic voting can be defined as the use of technical means as digital devices, computers and software, through which electoral data is scheduled, votes are counted and processed and electoral results are shown. These technological methods, which were initially adopted and have benefited greatly in the efficiency and effectiveness of the electoral process, originally came from other areas where the technology has been fully developed and thoroughly tested.

The emerging field of electronic voting is newly developed in the field of general and private election management. However, although the term electronic voting may at first glance seem to be a modern term, it has in fact been used publicly since 1838. During that year, an electronic method of voting by the Chartism movement in Britain was announced, by demanding the civil right to vote for British parliamentary elections, regardless of race, gender or property. Electronic voting was carried out under this method through machines shaped as large boxes divided into parts with the names of the candidates. Each voter takes a small iron ball and places it in the part designated for the candidate he elects; the ball pushes a mechanical counter that 5





counts the number of times the ball enters the section of each candidate. However, the idea was rejected at the time, and the movement failed to persuade the English Parliament to adopt this method of recording votes. Electronic voting was used for the first time in 1964.

### • Standards Governing Electronic Voting

Each electronic voting system must meet minimum security standards, i.e. electronic security, in all electoral processes and procedures. It is, therefore, necessary to rely on disciplined scientific standards, which can provide the minimum that enables us to accept the idea of electronic voting. These criteria are:

### - Legal or Legislative Standard

The application of electronic voting in any country requires the existence of legal legislation that supports the decision to apply electronic voting in accordance with the laws of electoral practice in that country. It is not useful to talk about the application of such a new concept unless there are clear and specific legislative tools that provide for the possibility of applying electronic voting. Therefore, it is necessary to review the legal texts associated with the applications of the electoral process to activate or find the legal text supporting this process as the legal framework is very important. Each procedure within the electoral process should be framed by a legal framework that authorizes and defines it and determines how it is conducted, as well as its means and criteria.

# - Technical Standard (Technical Tools and Requisites)





Standards for electronic voting devices should reflect the democratic values of elections and address all concerns about electronic voting. Confidence in the electronic merit used in the conduct of the electoral process can be achieved through the ability to address gaps that can appear everywhere; in computer systems and each aspect of the electronic electoral process, as well as in the electronic voting methods themselves. Security gaps are inevitable and can be overcome by forming a team throughout the active period of the elections working to repel any penetration or processing any loophole that can hit the system and conducting initial operations and continuous experimentation. The integrity and reliability of the operating system is an important source of system vulnerability, which usually offers many opportunities for sabotage, manipulation or hacking.

### - Social Standard (Societies' Culture)

Electoral education is every activity aimed at encouraging participation in elections, promoting democracy and giving voters details of the electoral process's concepts and procedures, which are part of the political culture. Electoral culture preserves democracy, controls its movement and contributes to its development because the opinion of the people and their conviction in electronic voting is important and necessary as they are the orbit and mandate of the electoral process. If people do not understand the importance of electronic voting, its benefits, methods and tools closely, this will mean the failure of that process and the erosion of its merits.

Modern internet communications (Facebook, YouTube, Twitter, websites, e-mail, electronic media), as well as media (satellite channels) and modern communication devices such as mobiles, have a significant and prominent role in spreading the electoral culture related to electronic voting among voters, and to see the experiences and findings of other countries that have taken electronic voting. Therefore, they must be used to raise awareness of what electronic voting is; without such awareness, elections cannot achieve their desired objectives.





Currently, there is not a unified set of agreed acceptable standards to meet the technical needs of electronic voting systems, some of which are not yet achieved and do not include all potential risks, which are supposed to be addressed at the end of the day. However, the existence of these standards is better than their absence which is considered a serious attempt to fill the shortfall and imbalance in these standards to complete the electronic voting process.

# Advantages of Electronic Voting

The growing information technology revolution that swept the world in the late 1900s has led to the development of electronic systems that carry out major and vital operations in private businesses, government and parliamentary institutions, and public utilities. It is characterized by a high degree of integrated organisation and high speed. Additionally, there are electronic systems for the management of the electoral process, including the electronic voting system that has emerged and with various technologies in more than thirty countries in the world such as the United States of America, Australia, Austria, Belgium, etc.

The most important justifications for the use of electronic voting in the electoral process can be determined by the following:

- 1- The use of the electronic voting system in the electoral process reflects a civilized image of the state in front of its international environment and provides the advantage of obtaining data quickly and clearly (based on the recording of voter data through biometric scanners for fingerprint, retina or DNA fingerprint, or reading a smart ID card that contains an electronic chip that includes voter data, or using a PIN that the voter receives from the election regulatory authority and is unique to others).
- 2- The use of technology in the electoral process plays a major role in facilitating the electoral administration's task with regard to the high costs required by traditional





logistics such as printing and storing papers and the large numbers of staff required to ensure the integrity of registration in elections, the complete and accurate accounting of the names of voters and their constituencies and removing the names of the deceased from lists that usually require manual counting.

- 3- Electronic voting plays a major role in reducing voting crimes during the electoral process, as using biometric photography and data make it impossible for non-voters to vote.
- 4- The use of the electronic voting system increases voter turnout, especially in developed societies where electronic means are widely used.
- 5- The electronic voting system helps to obtain the votes of those living abroad or those at home, such as the army and security forces, without the need for an early vote, this cannot be achieved when the manual (paper) voting system is used.
- 6- Electronic voting is the most successful means of ensuring the participation of people with special needs and persons with disabilities in the electoral process. On the other hand, technologically illiterate citizens will not stand in the way of the use of the electronic voting system to cast their votes, but on the contrary, electronic voting devices provided means to allow the voter to see the candidate's image and data related to facilitate the electoral process.
- 7- One of the results of electronic voting is the possibility of saving and storing data in more than one location, in addition to the speed of data processing and extraction of results, which helps to complete the electoral process efficiently and to release results at a record speed despite the complexities of the electoral process in terms of the system, voting mechanisms, counting votes and determining results.





Despite the advantages of introducing an electronic voting system, especially in light of the crisis of the spread of the Coronavirus, it does not prevent the electoral process from being exposed to the risks and challenges it may face during the electronic voting systems.

### • Disadvantages of Electronic Voting

- 1- The psychology of man makes him resist change in various areas of life, especially political ones, regardless of the form and extent of this change. This resistance to change varies and intensifies among political figures and people of influence for fear that this change will affect their abilities and influence. Thus, they turn towards questioning the ability of electronic voting systems to work accurately and efficiently. Resisting this change can end by increasing technological awareness, especially since computers are easy to use because of their languages and illustrations such as images that facilitate selection even by those technologically illiterate.
- 2- The use of modern technology in the electoral process requires the provision of key factors such as the presence of stable electricity and high economic resources because the use of electronic means requires large amounts of money to provide electronic devices and electronic security means. More accurate and secure electronic devices cost more.
- 3- The possibility of the electronic voting system failing in the electoral process, or the presence of an error in the design of the program. Providing guarantees to address electronic defects is as important as the design of the device and this is one of the most important challenges associated with the use of electronic voting in elections, which is likely the result of paper voting (manual) as it does not have such mistakes. However, this imbalance can be avoided by providing electronic voting devices with alternative





ones to ensure the validity of their information in the event of a flaw in one of their programmes. Printers that issue a printed paper in two copies, one given to the voter indicating his choice, while the other is retained by the election management committee can be used as well.

- 4- The possibility of the electronic system being subjected to piracy from abroad such as the case of hacking the electronic system of the Central Election Commission of Russia from Europe which has been addressed by the adoption of many laws punishing the perpetrators of these acts. On the other hand, guarantees were provided to the devices used in electronic voting to ensure the confidentiality of votes and prevent them from being hacked.
- 5- The lack of transparency is another challenge as electronic voting processes are not conducted with the presence of observers, unlike manual voting which is conducted under supervision since the production of ballot papers and conducting the voting process till the announcement of the results. However, the use of the electronic system enhances transparency as it limits human interventions (intentional and unintentional) and reduces the errors associated with the traditional electoral process, which are carried out using paper.
- 6- The possibility of voting on behalf of others such as family members as the head of the household can vote on the behalf of his family if he has their electronic cards. The voting process can also be subjected to coercion and pressures like what has happened in the local elections in Birmingham, England, in 2004, when some tribe leaders took control of family cards and voted on their behalf.

The risks that stand in the way of the use of the electronic voting system can be eliminated, and this is what many technologically advanced countries have done in developing the devices used in the electronic voting process, including the United States of America, which has stipulated in





the Help America Vote Act the conditions that should be provided in the device used in electronic voting:

- 1. Enabling the voter to review the accuracy of his/her choice before counting his/her vote.
- 2. Ensuring that disabled people can vote independently.
- 3. Establishing a mechanism for checking votes for reference if needed.
- Developing measures to test the efficiency of the devices used in the voting process by companies with experience in doing so with guarantees and the possibility of pretesting these devices.

By providing such requirements, the voting process and other processes such as counting votes and issuing results will be facilitated.

# • The Most Important Methods of Electronic Voting and the Experiences of Countries in Using these Methods

There are different methods of electronic voting used in many countries, most rely on modifying existing technologies or developing specific technologies for use to complete the electoral process. The use of technological methods of voting began in the 1960s, with the emergence of perforated card methods, followed much later by scanning, direct electronic registration and the use of the Internet in the completion of elections.

# Perforated Voting Systems/Tabulating





With perforated card systems, voters create holes in cards using hole tools provided to indicate their chosen candidates. After voting, the voter may insert the card directly to the computerized tabulating machines at the polling place, or place the card in the ballot box, which is later transferred to a central tabulation location.

The two common types of perforated cards used in the United States are Votomatic and Datavote. With Votomatic cards, numbers are set for the places where holes are created to indicate votes. The hole number is the only information printed on the card. The list of candidates and instructions for creating holes are printed in a separate brochure. As for Datavote cards, the candidate's name is printed on the ballot paper next to where the hole is made. Perforated cards and computerized sorting machines were first used in the United States in the 1964 presidential primaries in two Georgia counties.

#### Scanning Systems

The scanner combines specialized hardware and software. Devices take a clear picture while programs convert the image into computer-readable data.

Voters who use machine-readable cards are given ballot paper with the names of the candidates printed on them. Next to each candidate is a printed code, such as a rectangle, circle, or an incomplete arrow. The voter refers to the candidate of his choice by filling the rectangle or circle or completing the arrow.

After voting, the voter may place the card directly into the computerized tabulating machines at the polling place or in the ballot box, which is later transferred to a central tabulation location.





The computerized tabulating machines recognize the marks voters made on the cards and record the votes accordingly. Individual votes are recorded in a database and grouped to reach the overall results.

Mark sense systems were used by 24.6% of registered voters in the United States in the 1996 presidential election. The use of these systems in the United States is increasing as the old lever and punch-card systems are being replaced.

There are four main types of scanning techniques:

- Light reading of signs
- Optical character recognition
- Intelligent character recognition
- Photo technology

Although many U.S. perforated card systems are being replaced by more advanced systems, many voters still use them. As a matter of fact, 37.3% of voters in the United States used punctured cards in the 1996 presidential election.

### - Live Online Registration

The further development of computer technology by the end of the 1990s led to the latest developments in voting systems and online registration systems. In Belgium, Brazil, India and Venezuela, most if not all voters use devices of direct electronic registration systems for voting, while in the United States and other countries the percentage of voters using these devices to vote is increasing.

By using direct electronic registration systems, voters mark their votes directly into an electronic device through touch screens or by pressing buttons. Where written voting is





permitted, an alphabetical keyboard is sometimes provided to allow voters to cast their written votes.

With direct electronic registration systems, there is no need for ballot papers. Voting data is stored by an electronic device on a computer's hard drive, a portable floppy disk, a CD or a smart card. For backup and verification purposes, some systems copy voting data to more than one storage medium. For example, in Belgium, voting data is copied to a hard drive as well as to a smart card issued to the voter. After voting, the voter places the smart card used in the ballot box. The smart card can be used as a backup if the hard drive crashes, or as a means of checking the data recorded on the hard drive.

When polling stations close, data from different voting sites are integrated into the central computer, which calculates the total votes. Data can be transferred to the central computer either on portable devices such as CDs or through computer networks.

Since the 1990s, phones have been used as a type of online registration system. Voters can register their votes directly in computer systems using their phones and identifying themselves through ID numbers (PINs), following a series of instructions. The introduction of the option of voting using online registration systems in locations far from voting places, such as online and telephone voting, raises the unresolved issue of remote voter identification, as well as security standards that require ensuring that the person casting their vote is, in fact, a voter, that they cannot vote more than once, and that the vote is confidential.

## Problems of Egyptians Voting Abroad

The National Elections Authority, in coordination with the Ministry of Foreign Affairs, has designated 141 diplomatic mission headquarters abroad as the headquarters of the sub-





committees where Egyptians will vote abroad in the Senate elections, on August 9<sup>th</sup> and 10<sup>th</sup>, with the process of receiving ballots by mail from August 9<sup>th</sup> to 12<sup>th</sup>.

In order to organise the voting process for Egyptians abroad in light of the spread of coronavirus, the decision of the National Elections Authority allowed the voting process for Egyptians living abroad by mail for each voter. The ballot papers shall then be sent to the election committees indicated by the decision of the National Elections Authority organizing this during Sunday and Monday 9<sup>th</sup> and 10<sup>th</sup> of August 2020, and in the event of runoff on Sunday and Monday corresponding to 6<sup>th</sup> and 7<sup>th</sup> September 2020.

In accordance with the decision, the committees will begin their work from 9 a.m. to 9 p.m. to receive voting letters from Sunday, August 9, 2020, to Wednesday, August 12, 2020, and in the event of runoff from Sunday, September 6, 2020, to Wednesday, September 9, 2020, according to the local timing of the mission where the ballot is taking place.

Here lies the question of whether Egyptians can vote, even though some distances between the polling stations and the residences of some Egyptians exceed 1,000 kilometres, which means that Egyptians have suffered the trouble of travelling or the tendency of the majority of them to abstain, but if the Egyptian government implements the electronic voting project, this will be a definitive solution to the reluctance of a large number of Egyptians abroad to vote, especially since the number of voters reaches 9 million votes in different countries of the world.

# • The Possibility of Using the Electronic Voting System in Egypt

The electoral process in democratic systems of government is a means of translating the will of the people into representatives that the people wish to be governed by. Thus, this process should include the participation of all categories of the people, especially since Egypt is an old,





multicultural country and its educational levels are progressive. Egypt has many families and tribes, especially in the governorates of Upper Egypt and some governorates in Lower Egypt. This participation can be achieved using the best voting method that is compatible with the current situation of Egypt and considering the extent to which technology can be used in the electoral process, particularly electronic voting. Any electoral process goes through three stages:

**<u>Pre-voting</u>**: At this stage, the National Elections Authority must prepare the voter register in each constituency in accordance with the Senate law on the division of electoral districts and the subsequent districting law for the House of Representatives elections and then the law on the division of electoral districts for localities.

The Authority should then organize a media campaign to educate citizens about the mechanism of distributing the electronic voter card, which is a plastic chip similar to a bank credit card or smart card, carrying a memory cell containing all the data about the person and determining his electoral centre and the aim of using it to reduce fraud and facilitate voter voting, because of the security features of these cards, which protect it from fraud or manipulation, making the voting process smoother.

The voting phase: In previous elections, voting by paper was used by marking the candidate chosen by the voter, but the majority of modern democracies exaggerate the procedures related to the electoral paper and accept the results issued by it. Transparent boxes are used and ballot papers are provided with security signs that prevent them from being imitated or falsified. Moreover, ink is used to prevent the repetition of votes. There are more precise details regarding the nature of the ballot paper, the proportion of silver nitrate in ink and the development of measures to ensure the presence of representatives of political entities and





local and international followers, and according to these measures, counting votes and announcing the results are then carried out manually.

What we aspire to is that technology is used at all stages of the electoral process. Integrated electronic voting starts with identity verification procedures before the voter casts his vote, through data entry, processing and monitoring, and ending with the counting and sorting process and announcing the results. Electronic voting is optimal for the Egyptian situation at the time by providing electronic voting devices in polling stations and that these devices include software to verify identity-based on, for example, the thumbprint, which has been stored in Egypt for more than 5 years and used in the issuance of identity cards or criminal case papers, especially that the electronic card will greatly facilitate the storage of thumbprint information within the electronic system. Additionally, it is required that the program running for taking the votes of the voters uses simple language and options in addition to using means to clarify and facilitate the electoral process. In this regard, electronic voting should be used, as its devices set an example in electronic voting technology that prevents fraud and prints receipts. This technique provides a simplified system that depends on touch screens, where the voter chooses his preferred candidate by touching a box that appears on the screen containing the name of the candidate, his picture and the party he belongs to. Once the selection is made, the screen appears again stating the name of the candidate asking the voter to confirm his choice. This technology is simple and safe even for those technologically illiterate because it is done through a screen that includes the name of the candidate, his photo and information about his party with the confirmation of voter's choice before his vote is finally counted, to reassure the voter of the correctness of his choice before he finishes voting.





**Appeals phase:** Appeals and complaints following the voting process play an important role in achieving a genuine conviction of the electoral process and may lead to a significant and fundamental change in the results of the vote and the distribution of seats. The framework followed in the electoral process requires the electoral process supervisors to hand over the results to the head of the counting committee in the governorates, which sends them to the counting and sorting centres at the authority's headquarters, which undertakes the task of compiling the results, and then announcing the preliminary results. The final results are not announced until after examining the electoral appeals by the competent authorities.

All of the above mentioned in the third phase of the electoral process are routine procedures that do not affect its credibility whether by following paper or electronic voting systems. The only difference is the speed of completion and reducing costs and effort in counting and showing results. Electronic voting will not affect the validity of the electoral process but will facilitate its procedures and verification, speed up its completion, help maintain social distancing, address the virus transmission and reduce voting time.

### Conclusion

Electoral management bodies around the world are increasingly moving towards adopting technologically advanced voting systems on election day, where electronic voting helps simplify and speed up the voting process and counting and scheduling votes and provides greater options for citizens, especially in light of the crisis of the spread of Coronavirus worldwide, which has made everyone use technological means to reduce crowds and implement the recommendations of social distancing.





### **First: Findings**

- 1. The electronic voting system in the electoral process reflects the well-being and scientific progress of the state and accelerates the electoral process as well as the superior accuracy it provides in sorting and showing results.
- Following electronic voting systems reduces the spread of COVID-19 and other viruses, especially since it reduces crowds and implements the recommendations of social distancing.
- 3. The use of electronic voting enables the participation of everyone, especially those with disabilities and residents abroad.
- 4. The data stored in electronic voting programs is a reference for the state that can be used in various areas of life, including specialized scientific fields in this field.

### Second: Recommendations

- Amending legislation on voting procedures and adopting the principles of electronic voting in two phases.
  - a. Voting phase at polling stations through electronic touchscreens as a first stage.
  - b. Voting stage from home through the National Election Authority website by smart card number and sending a voting code (OPT) to the mobile phone registered on the smart card number.
- 2- Ensuring that the devices used in electronic voting are in accordance with international standards to ensure accuracy and efficiency and prevent cases of electronic piracy.
- 3- Conducting pre-testing processes before they can be circulated and selected, and working to disseminate electronic culture to everyone.
- 4- Ensuring that the Election Authority has an alternative contingency plan to deal with sudden system failures by providing a reserve of replacement equipment and spare parts,





and a qualified technical team to deal with maintenance as required by the technical state of the operating system.