**Electronic Voting** is the standard means of conducting elections using [Electronic Voting Machines](https://en.wikipedia.org/wiki/Electronic_Voting_Machines), sometimes called "**EVMs**" in [India](https://en.wikipedia.org/wiki/India). Electronic voting machines are mostly used by the developed countries to count the votes during the general elections. However, there are several controversies associated with these electronic voting machines. Earlier, vote counting was done by paper ballot but with the advancement in technology, electronic voting machines came into the picture. There are several merits and demerits associated with the Electronic Voting Machines (EVM). The use of EVMs and electronic voting was developed and tested by the state-owned Electronics Corporation of India and Bharat Electronics in the 1990s. They were introduced in Indian elections between 1998 and 2001, in a phased manner. Prior to the introduction of electronic voting, India used paper ballots and manual counting. The paper ballots method was widely criticized because of fraudulent voting and booth capturing, where party loyalists captured booths and stuffed them with pre-filled fake ballots. The printed paper ballots were also more expensive, requiring substantial post-voting resources to count hundreds of millions of individual ballots. Embedded EVM features such as "electronically limiting the rate of casting votes to five per minute", a security "lock-close" feature, an electronic database of "voting signatures and thumb impressions" to confirm the identity of the voter, conducting elections in phases over several weeks while deploying extensive security personnel at each booth have helped reduce electoral fraud and abuse, eliminate booth capturing and create more competitive and fairer elections. Indian EVMs are stand-alone machines built with once write, [read-only memory](https://en.wikipedia.org/wiki/Read-only_memory). The EVMs are produced with secure manufacturing practices, and by design, are self-contained, battery-powered and lack any networking capability. They do not have any wireless or wired internet components and interface. The M3 version of the EVMs includes the VVPAT system

### **Top ten advantages of electronic voting machines:**

**1.** In most of the advanced version of electronic voting machines, there are no external communication paths which make it difficult for the hackers to hack the machine and tamper the count numbers.

**2.** Electronic voting machines with touch base screen are proven to be advantageous for the physically challenged people. In a paper ballot, these physically challenged people were not able to cast their votes in private. However, with the new EVM in place, even handicapped people can use their right to vote in private.

**3.** Electronic voting machines are cost effective and economical. In the paper ballot, the amount of raw material used is higher. It directly impacts the environment as paper ballot uses papers to cast votes. However, the cost associated with holding elections with EVMs is considered to be negligible.

**4.** The best thing about electronic voting machines is that they are real time savers. With electronic voting machines in place, one can count the votes in few minutes which makes life easier for the election officers on duty. In a paper ballot, the vote counting process is quite tedious and time-consuming.

**5.** Electronic voting machines are quite effective against the bogus votes. Electronic voting machines are programmed to capture a maximum of five votes in a minute. Due to which a single vote cannot cast fake votes. Also in few advanced electronic voting machines, a sound of beep comes after one casts their vote which lets the officer on duty know that the vote has been cast by an individual.

**6.** Electronic voting machines are designed in a way that they keep a track of number and details of votes recorded. The election commission can even save the data for a longer period of time which might be helpful for referencing in future.

**7.** In a largely populous country where millions of people come out to cast their votes, the electronic voting machine works as a wonder. In a paper ballot, it takes a huge amount of time for everyone to cast votes.

**8.** Electronic voting machines are easier to carry and transport from one place to another without any hassle. One single machine can record several votes captured through that machine.

**9.** Few electronic voting machines also come with a voice support to assist the visually impaired voter. In such cases, the visually challenged person can cast their vote without any problem.

**10.** In electronic voting machines one can see all the symbols and names of the candidates together which makes it easier for the voter to choose among the many and cast their votes.

### **Top ten disadvantages of electronic voting machines:**

Along with the advantages, electronic voting machines are also notorious for its misuse. There have been cases when people have accused a particular part of EVM tampering. We have jotted down top ten disadvantages of using electronic voting machines.

**1.** With recent elections in the United States, many software programmers have claimed that the electronic voting machines are vulnerable to malicious programming and if it gets affected then any hacker can hack the machine and can tamper the vote counts easily.

**2**. Many physically challenged people have complained that the touch base screen is not efficient enough to capture the vote accurately. Sometimes it leads to the voter ending up voting for someone else unintentionally.

**3.** Although it takes the time to count votes that were captured using paper ballot but people fully trust the process as high technology are also vulnerable to hackers' attack.

**4.** The biggest change with technology is that no matter how much data it records but a single virus can destroy the entire data storage. The electronic voting machines which were used during the elections are susceptible to damage which will result in loss of data.

**5.** The highly humid area and those areas which receive frequent rainfall are not suitable for casting votes using electronic voting machines. As machines are prone to damage due to high humidity level thus usage of electronic voting machines is not advisable in such areas.

**6.** Most of the electronic voting machines used in the country were foreign manufactured, which means the secret codes that control the electronic voting machines are in foreign hands and they can be used to influence the election results.

**7.** Fake display units could be installed in the electronic voting machines which would show manipulated numbers but originally fake votes could be generated from the back end. This process does not need any hacker to hack the software. Such fake display units are easily available in the market.

**8.** Most of the electronic voting machines used in the country do not have any mechanism by which the voter can verify their identity before casting the vote due to which fake voters can cast numerous fake votes.

**9.** The electronic voting machines also do not generate a slip confirm the candidate one voted post pressing the button. In these cases, it is very easy for a criminal or a hacker to manipulate the votes. If the machines would generate such slips, then people could verify if the number of votes captured via EVMs was in line with the details on slips received by the voter.

**10.** Electronic voting machines can be tampered during its manufacturing and in such cases, it does not even require any hacker or malware to manipulate the actual voting.

Now going through the pros and cons one can decide whether electronic voting machines are useful or disadvantageous.

# [**India's EVMs Vulnerability to Fraud**](http://indiaevm.org/)**:**

* Contrary to claims by Indian election authorities, these paperless electronic voting systems suffer from significant vulnerabilities. Even brief access to the machines could allow dishonest election insiders or other criminals to alter election results.
* In the video above, we demonstrate two kinds of attacks against a real Indian EVM. One attack involves replacing a small part of the machine with a look-alike component that can be silently instructed to steal a percentage of the votes in favor of a chosen candidate. These instructions can be sent wirelessly from a mobile phone. Another attack uses a pocket-sized device to change the votes stored in the EVM between the election and the public counting session, which in India can be weeks later.
* These attacks are neither complicated nor difficult to perform, but they would be hard to detect or defend against. The best way to prevent them is to count votes using paper ballots that voters can see.