

Digital Elections - Voting Through Phone

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Abstract: Elections in India are nothing short of a spectacle that generates immense activity generally associated with a mega sporting, religious or cultural event. In the case of general elections, the ‘festivities’ are Pan India. The event starts off as a massive opinion building and image building exercise and then moves on to mega rallies and speeches. Many facets of the Nation are paralyzed in anticipation or expectation of the nature of Govt to follow. The period of campaigning and conduct are laced with humour, violence, misery, corruption and celebrations. While measures to overhaul the entire electoral process are under serious consideration, this paper focuses only on the aspects of the conduct phase. This phase spread over one month in the case of general elections, has a grave adverse impact on several facets ranging from policy-making and strategic decisions to administration, governance, financial health and even the moral health of the Nation.

Exploiting the advancements in Information & Communication Technology to make the conduct of election easier, faster, less expensive and have the least effect on the day-to-day life of the public is of paramount importance. This paper examines the use of mobile phones for the exercise of the franchise through the internet. All considerations such as availability and accessibility of mobile phones to all users, the security of the phone at the subscriber and receiving ends, the bandwidth, the anonymity of the voter, the security of the voter from intimidation, to coercion, to being held hostage, are discussed. A recommended strategy to use mobile phones for voting, without compromising on any facet of the secret ballot system has thus been evolved. The recommendations include the issue of custom-made mobile phones to all voters in lieu of a National Identity Card, use of these phones as a distress call device in non-election periods and to cast vote during the elections. The features of the phone and the system including various biometric parameters that secure the voter, his identity and his choice from any type of threat, allocation of dedicated bandwidth for communication etc., have also been dwelt upon. The advantages of this new concept over the existing process has also been summarized. The initial financial burden is more than justified by the reduction of manpower involved in the election process, reduction in the elaborate

security arrangements and movement of the machinery for each phase, reduction in violence, crime and corruption, mitigation of external influences and above all minimum disruption to administration and governance in the conduct phase.

Keywords: Administration, Analysis, Benefits, Configuration, General election, Identity, Information, Mobile phone, Recommendations, Security, Technology, Upheaval of system, Voting.

I. INTRODUCTION

Indian general elections 2019 was held in seven phases from 11 April to 19 May 2019 to constitute the 17th Lok Sabha (2019 General Elections, 2019). Of an electorate of 900 million, over 67% voted and the results declared on 23 May (India, 2019). A cursory glance at the time frame alone is adequate to indicate the mammoth and gargantuan levels of work involved in its conduct. An expenditure of Rs. 60,000/- crores were incurred overall, with the formal expenditure by the Govt being 20 to 25 % including logistics. Over 500,000 Central and State police forces were deployed for security during the election. This was in addition to the police forces involved in the prevention or mitigation of political violence in the *conduct* phase. Over 5 million people were involved in the conduct of elections i.e. to assist the 400 plus Election Commission of India (ECI) staff. These people were professionals from several walks of life, many of them otherwise involved in essential services. Elections to four state assemblies were held along with the general elections and in three other states, elections were held in Oct/ Nov in the same year. Assembly Elections in Andhra Pradesh cost the exchequer approximately Rs. 10,000/- crores and amongst the other states where standalone elections were held, the cost incurred was approximately Rs. 5000/- crore each, on an average. The workforce and machinery involved, the security requirements and disruptions to normal life were huge and humungous, although a fraction of the commitment in the general elections (India E. C., 2019).

Election reforms proposed and presently under *consideration*, span across a wide spectrum of facets. Ranging from the concept of ‘One Nation One Election’ to limit on expenditure

by candidates, to transparency in the funding of political parties, there are a plethora of issues being discussed (India E. C., Proposed electoral reforms, 2018). However, is the methodology of conduct of elections involving setting up 10 Lakh polling stations, five million staff, half a million security personnel, EVMs, paper trails, a month-long extravaganza replete with booth capturing attempts, political violence etc, the best method in the 21st Century? Some may well argue that in this Nation of over 1300 million such kinds of a mammoth exercise is the only way. Is it?

There has been a revolutionary change in aspects of governance, administration, logistics and event management in the country in the last two decades, ushered in by developments in Information and Communication Technology. We are able to carry out research surveys, market goods, commodities and even ideas, conduct online exams, mould public opinion, carry out opinion polls on mobiles, and update results in fractions of a second because of these developments in ICT. What then prevents us from conducting elections in a speedy, secure, administratively and logistics friendly manner, with minimum expenditure and least impact on day to day functioning, using mobiles as the instrument to vote. With people having to vote from the cool or warm confines of their homes, upto 99% voting is a distinct possibility.

There are several reasons why such a concept would fail if implemented with the current or existing infrastructure. The reasons would include the availability of mobile telephones with the entire population, the secrecy of the vote so exercised, the fear of coercion and threat, clogging of the spectrum and several others. However, if we were to overcome each of these issues by policy, technology and administrative skills, would the result not be desirable? People from Ladakh to Kanya Kumari, Kutch to Zunheboto would vote near-simultaneously with an NRI from Kuwait and an Army Jawan from UNMEE and the result declared within 24 hours. All by the click of a button, whether from a coffee shop, a crowded metro or patrolling in in the dense jungles of Dantewada (ensuring connectivity being a precursor). The process of achieving and implementing such a system is being explored in this paper. The additional payoffs and offsets of such a technology will also be examined.

II. AIM

To outline the strategy, technology and administrative support required to enable and facilitate elections by mobile phones.

III. UNDERSTANDING THE EXISTING SYSTEM

The Indian Constitution guarantees Universal Adult Franchise, whereby all adults past the voting age (now 18 years) have a right to vote and elect their representative to the parliament (Centre) and legislature (state). On the virtue of being citizens of a republic and enjoying Right to Equality, the vote of an industrialist, Bollywood actress, Team India cricketer, debt-ridden farmer, 'saas and bahu' are equal. It took over two centuries for

democracies such as France, Britain and the USA to reach such levels of maturity that the framers of our constitution displayed even before India became independent. Suddenly the Prince, Landlord and the Scheduled Caste, all became equal stakeholders in selecting a leader and consequently a Govt (Shani, 2018).

Obviously, with 12% literacy and over 65% below the poverty line, the population in 1947 couldn't have come to terms with the rights and responsibilities that the constitution placed on them (Brainly, 2019). Hence, illegal and criminal practices crept into the election process, since independence. Initially, with strong central leadership, worshipped by the masses for their role in the independence struggle, none of these malpractices affected elections at the National level. Cracks had started to occur inside but didn't surface in the first 15 years of India's *independent* existence (Chawla, 2018). However the caste and class affiliation, corruption, feudal lords, religious heads etc. influenced the minds of the common voter. Soon malpractices during election increased, first by trickle and then exponentially, forcing the Govt to make the ECI stronger and adopt measures for clean elections. However, the diversity of our population found expression through polls, with people voting on caste, communal and linguistic lines. The quasi-federal structure of our country had several positive connotations but brought with its evils of divisive political (Singh, 2019). Absolute majority at the centre was replaced by coalitions that met interests of all sections of society to bring about a balance in power-sharing, as the new norm rather than an exception. All these factors made security the factor in the conduct of elections. Security of identity of the voter, his choice in exercising franchise, his physical security, security of information of one phase of polls to impact the remainder, security in and around polling booths, security of voting machines and later EVMs, security during counting etc. assumed great importance. Media activism in the form of opinion polls, opinion-making, political affiliations and the power of technology-enabled presentations to impact human minds, ushered in new challenges. ECI had to thereon lay restrictions on the press also. The advent of social media further challenged the prospect of unbiased polls. Whereas media is an established organization that could be identified and penalized for unlawful actions, the social media was a nebulous hydra that percolated all safeguards to influence perceptions. The one and only challenge to conduct elections was and is 'security'. With that as the watchword aspects such as economic impact, public convenience, administrative ease, logistical issues and conduct of day to day activity were sacrificed at the altar of security in the conduct of elections.

Although we have a strong Govt with an absolute majority at the Centre presently, India has had its tryst with coalition Govts at the centre and in states. Such Govts have plenty of faultlines and cracks which when exploited by self-serving politicians can lead to the fall of Govts without completion of their tenures. Reelections double the burden on the exchequer and the gargantuan efforts involved in elections have to be repeated.

There has always been strong criticism of the ballot box system of counting votes. The ECI had invariably ordered repolling in

.5 to 2% of the polling booths due to either booth capturing/ attempts thereof, illegible voting sheets, non-adherence to secret ballot process etc. in most elections. The counting of ballot boxes was again a strenuous labour and time heavy exercise prone to both human error and the 'hand of God'. EVMs were introduced to enhance speed, accuracy and consistency in counting, mitigating the human endeavour involved. However, EVMs have met with criticism from certain sections of media, parties that lose, or miscreants to create an illusion of grievance, or from a section of society who don the garb of expertise. Hence paper trails had to be introduced to validate EVM based results. Overall, the existing system despite the best of intentions and efforts involved is not blemish-free (EVMs vs Paper ballots, 2020).

Since the ECI is posted with directional and monitoring staff only, the huge manpower-intensive machinery for the conduct of elections is provided by the Centre and State Govt. Management of election duties includes nomination and obtaining willingness of nominated personnel/entertaining legitimate requests or legitimate sounding requests for changes, training and orienting these personnel, transportation and accommodation arrangements in far-flung areas etc. The 5 million Govt officials involved in election duties include teachers, those involved in essential services, those employed in other important occupations such as banks, registration of marriages, birth and death, Govt tourism sector etc. They are taken off their primary work for these election duties, in the name of National service, causing immense upheaval in the administrative machinery and essential services (Chowdhury, 2019).

The facet of security was briefly touched upon in the introductory passage. The security aspects of election-related only to the conduct phase are as follows:-

- i. *Security of Polling Stations:* Security against, booth capturing, intimidation, appeasement and political violence mandate the deployment of at least a section and upto a platoon (36 personnel) of central or state police at each booth, depending on the sensitivity of the booth. In the case of EVMs, there is a need to prevent tampering of the machines (they are tamperproof as widely believed but several political leaders have lodged FIRs alleging malfunctioning or malpractice with EVMs), bringing in spare machines in case of failure and physical security of the machines after the voting. Security of polling stations in Naxal infested areas and communal cauldrons, require police to be prepared for large scale violence including use of guns and explosives by miscreants.
- ii. *Security of Voters:* Voters insensitive, insurgency prone, terrorist infested and naxal dominant areas have to be brought securely from their homes to the booth, saved from coercion or intimidation at the booth and sent home safely. These are the hard facts about the conduct of elections in Kashmir, some parts of NE and the naxal corridor.
- iii. *Prophylactic Security:* Elections offer the best opportunity for terrorists, separatists, their armchair supporters and

the funders across the borders to create mayhem and attribute it to the lack of consensus or to bring dishonour to the political process. The media both mainstream and social, cover such stories extensively providing terrorists with the publicity they seek. Massed gathering of people is also an ideal target for terror carnage ranging from the use of explosives to driving a heavy vehicle at high speeds into the crowds. The entire range of security forces from Army on the borders, IAF (for the conveyance of Special Forces and for the evacuation of casualties or movement of election staff to inaccessible areas), the CPOs and PMF not directly nominated for election duties, get involved in prophylactic security. Hence, the involvement of security forces is much more than the five Lakhs directly nominated for election duties.

- iv. *Timeframe:* General elections 2019 was conducted in 7 phases spread over 37 days, due to the massive mobilization and shifting of resources involved and the reasons elaborated upon in the previous paras. For a whole month, the Nation was in tenterhooks due to the uncertainty caused by-elections. Most of the media had predicted a reduced majority for the ruling party. This resulted in several political parleys and presumably underhand arrangements, corruption, coercion and cash transfers beyond the realm of legality. The markets were unstable resulting in loses for investors. The economy slowed down with the policies of the next Govt unclear (Impact of Elections on Indian Economy & Markets, 2019). Several strategic deals were put on hold with apprehensions regarding the next Govt's intent to follow them through. Several bills were held up or passed without discussion, thanks to 'walkouts' by the opposition. Such observations on the general elections 2019 are also true for several previous elections also, with variations. Conduct of elections over such a long time period gives adequate opportunities for interference by own power centres outside the political arena, unfriendly neighbours and even international powers. All this could be mitigated and in certain cases avoided, if elections were held and results declared on the same day or at least within three to four days.

IV. HOLDING ELECTIONS ON A MOBILE - PRACTICAL PROBLEMS

- i. *Elaboration of Need:* When one talks of the election through mobile phones it indicates the most accessible, available and handy instrument to access the internet. Hence, you could use any device, whether it be a desktop, laptop, tablet or any other instrument with the same effect. The parties, candidates, their achievements and manifestoes are available on the net. After having perused the details available and corroborated the same with personal experience or views of family, friends and peers (these are positive influences and not seen as an impediment to our expression of individual liberty and

choice), the voter exercises her franchise on his own mobile. The counting should be carried out without human interface, in real-time, preferably at one physical center or several linked centers and updated periodically, in lines with the World Poverty Clock or max-min temperatures, cricket scores etc. The identity of the voter and links with his choice need to be obliterated at the counting center and results declared at the end of the day. It would also be preferable to have a well-intentioned curfew on that day to let feelings sink in and allow celebrations or democratic expressions of sorrow a day later and most importantly to obviate chances of coercion, at the residence of the individual.

ii. *Constraints in Voting Through Digital Means:* Voting through digital means with the present arrangements have the following major drawbacks:-

- *Access to Mobile Phones:* Of 1100 million (approx.) mobile phone subscribers in India, 450 million (approx.) have smartphones with internet access (Department, 2020) (Diwanji, 2020) of these approx. 25% are below voting age. Hence, there will need to make mobile phones with internet connectivity available and accessible to all the 900 million voters.
- *Security of the Handsets:* Use of the existing phones makes the user vulnerable since the number is known to a large number of people ranging from Govt agencies to commercial establishments to friends and relatives. Further, these phones are susceptible to cyber-attacks at the user end. There is a good chance that a default voter choice could be entered and choice of the voter becomes redundant.
- *Security of Media:* In case the existing spectrum is used for exercising the franchise, there is a clear possibility of interception, manipulation or blocking of data by cyber-attacks. Manipulation of election results are beneficial to world powers, MNCs, neighbouring countries, terrorists and their proxies and of course! to all political parties. Hence, engagement of professional hackers even at a huge expenditure of time, resources and finances will not pose a problem to any of the stakeholders.
- *Clogging of Spectrum:* A number of voters attempting to vote through the mobile at one time can clog the system and even render it dysfunctional. Undesirable elements may take advantage of the process and increase the load on the system disproportionately. A separate spectrum may need to be allotted for elections and perhaps for emergency responses in lines of the spectrum allotted to the defence forces, aircraft including ATC communications and for maritime movements (ICAO, 2009).
- *Connectivity:* It is reasonably fair to assume that any mobile subscriber would choose a vendor who provides maximum connectivity in his/her residence or workspace. It would, therefore, be ideal that a voter exercises choice at these locations where connectivity is maximum. However, while planning for a system where people involved in field duties, essential services, security personnel on duty, occupations involving movements such as railways, roadways, airways or shipping industry can vote on the same day connectivity would become an issue in exercising franchise through mobile phones.
- *Anonymity of the Voter:* The secret ballot system ensures the security of the voter against persecution at a later stage by both political parties and their strong-arm functionaries. There are several other agencies ranging from business houses to intelligence agencies both own and foreign, to potential employers to religious institutions who may be interested in knowing the electoral choices of the voter. This choice would reveal the nature, inclination belief, and influences of the voter which each stakeholder could use to pursue their own requirements.
- *Intimidation:* The polling booth and connected security cum administrative arrangements ensure that the voter exercises franchise without fear. In case of voting by mobile telephones, these instruments could be seized or confiscated by interested parties who can then cast a proxy vote in the owner's name. Several organisations or forums that the voter belongs could get voters together and ensure voter choice as per a group agenda. Unscrupulous elements can check the choice of the voter on his/her telephone later and put the voter in peril.

There are several other problems envisaged in exercising franchise over mobile phones such as influences within the family and friends that can tend towards coercion. These include forced voting within the four walls of the home with limited flexibility in cheating the intimidators, encouragement towards NOTA in private, seizing of mobiles within domestic or even community space to prevent access to vote etc. All these issues would also have to be catered for in the implementation of the new system.

V. RECOMMENDED STRATEGY

- i. *Issue of Mobile Phone in Lieu of Voters Card/National Identity Card:* The concept of a national identity card for all Indians is presently under evolution (Misra, 2019). Such a card can replace multiple cards such as Aadhar card, voters card, ration card etc. *Instead of an Identity Card, each Indian can be issued a mobile phone* with a chip containing all his/her details and the provision to send messages or make recorded calls to govt agencies and emergency services only. To reiterate the same, in normal circumstances, this phone is used in lieu of an

identity card and for the multifarious reasons that the National I Card is meant for. It could also have a provision by which any signal from the user for emergent assistance is received at a Central Registry and the nearest Police Control Room is informed along with the geographical location of the concerned person. During elections, the names of candidates and their parties of the constituency to which the candidate belongs will be available at a predesignated time through this mobile for the voters to peruse and decide on their choice. The voter can exercise his franchise at the assigned timeslot by a message.

ii. *Characteristics of the Phone:* The phone issued to all voters should preferably have the following characteristics:-

- 5 cm length, 3 cm breadth and 3 mm thickness to fit easily into a purse, or into the shirt pocket duly secured by a chord around the neck or carried in a ladies purse, also secured to the body or dress by a chord.
- A smartphone with subscriber end security and provision for messages and emergency signals only and an inbuilt GPS.
- The phone would only be connected to a Central Registry (multiple servers) that monitors movements of the users and is fully aware of their location at all times.
- The phone would be allotted an 11 digit alphanumeric identity for 24 hours and the number is thereafter interchanged from within the pool of 1200 million such combinations available at the central registry. This change is done automatically without human interphase. Another server operated only after meeting several security protocols would handle the link between the user and the alphanumeric identity that changes every 24 hours.
- The phone can only be accessed by the user by his own fingerprints on touching the screen or iris scan in case of the elderly, whose prints are obliterated.

iii. *Characteristics of the System:* It would be ideal to create an exclusive internet facility for the purposes of the election alone. However, such a capability has been attempted by several advanced countries and presumably abandoned due to prohibitive costs. However, the Nation has the ability to ensure exclusive use of existing internet for a period of time. The system designed for online voting would have encoded messages sent on the media which is kept free for the process, that is decoded at the server to ascertain the validity of the vote and constituency of the voter. The dedicated bandwidth would be auto monitored for spurious and malicious transmissions and those would be blocked by cybersecurity means. The system so designed would have to be implemented indigenously by a nominated IIT or IISc in conjunction with the Army cyber warriors and supervised by a JPC for tamper-free security. It would be counterproductive for the

private sector to be involved in any manner. The system developed should have a series of interlinked servers with inter-server access only possible after meeting several security protocols. One or two mock elections need to be conducted on the digitized system and compared with elections as per the existing system. It then needs to be put through a state election before implementation in General Election 2024.

- iv. *Anonymity of the Voter:* When voters send the predesigned code for the candidate of their choice, along with an iris scan (taken by the camera on the phone), it is received at the Central Registry. The software only affirms the validity of the vote by checking if the voters' alphanumeric identity is from within 1200 million, pre-fed into it. It also checks whether the iris scan of the voter matches that in the data bank. There will be no human interface to this matching. In case the number and the scan do not match that of the voter, the vote would be declared invalid. Such a voter contacted by the local police from the district control room within 6 to 12 hours. In case of a technical hitch, the voter can avail another chance to exercise his franchise within the next 2 hours. If it's a case of manipulation, legal action is initiated and the vote declared invalid.
- v. *Security of the Voter:* The date for elections would be revealed by the ECI only 24 hours prior. Section 144 should also be imposed in a near-simultaneous timeframe whereby all movement outside the homes, offices or workspaces will be checked and perceived offenders detained. In case the voter perceives a threat, a press on the emergency button of the mobile will result in the activities discussed earlier. Seizure or theft of the phone would have no meaning as the vote without iris scan will, in any case, be invalid. In case of coercion or threat, the offenders will never find out whether their threat or coercion has borne fruit since any transmission including the choice exercised by the voter would be erased automatically from the mobile. Influencing the voter by intimidation, in the name of caste, creed or ideology can still occur undeterred but the degree and extent remain the same as in present arrangements.
- vi. *Other Features:* The phone would have multiple apps on the opening of which details as available today on an Aadhar card, driving license, PAN card and voters card appear on the screen. These apps would only open on the matching of fingerprint data of the user or NoK saved within the device. An option would exist wherein an alarm would sound in the mobile every 12 hours and in case it is not switched off for 20 minutes NoK and another number of choice will be alerted. Again, the alarm would be switched off only by touching the screen and fingerprints match those in the library inside. This is a provision for forays into areas of impending danger such as girls venturing out late-night (notwithstanding the stringent measures adopted by Police in all states), trekkers, mountaineers, rally drivers or even late-night car journey on highways.

VI. EVALUATING THE CONCEPT OF VOTING THROUGH MOBILES

Most of the advantages of voting by mobiles are obvious. However, some of the more pertinent ones are highlighted for emphasis:-

- The mammoth exercise of establishing polling booths, counting centres, safe houses for ballot boxes/EVMs etc. is obviated.
- The requirement of over 5 million people on election duty is made redundant. The adverse impact on state administration and essential services caused by the mobilization of that personnel is obviated.
- Mobilisation, deployment and shifting of 5 Lakh security personnel involved directly with elections are mitigated (Jain, 2019). Local police with some augmentation in sensitive areas can manage the elections. Similarly, the workload of all security agencies involved in the provision of prophylactic security is also reduced.
- Poll violence and coercion that have become a norm in electoral politics would be eliminated largely.
- The long duration for the conduct of elections, and the resultant instability and losses, as deliberated upon earlier in the paper, is overcome.
- The scope for international powers, inimical neighbours, MNCs, terrorists and even political parties themselves to intervene, influence, disrupt or take advantage of the insecurities during elections will be reduced. Parliamentary proceedings, policy decisions and governance will also not suffer as elections would be conducted in the shortest possible timeframe with minimum notice.
- Since the time for campaigning is reduced the cost of conducting elections would also be reduced to a fraction of the existing expenditure.

Challenges: The methodology for the conduct of elections through mobile/on the net can only be actualized by a time-bound plan evolved by management tools such as PERT and CPM. The technology required for such a system exists in the standalone mode for several varied requirements, however, there is a need to integrate and harness this technology. It would need the establishment of manufacturing units for over 1200 million handsets, ensuring secrecy measures at the subscriber level, a dedicated spectrum if possible, an automated control center and above all a foolproof system that can stand the best of cyber-attacks. However, all this not beyond India and can be enabled in the next 5 years or so. The state need not bear the entire financial burden of such an exercise. The cost of a sleek, thin, smartphone catering for the provisions mentioned including data bank of fingerprints and ability to match and the danger alarm systems is likely to be more than a medium-range smartphone. However, such costs would come down

considerably when manufactured in bulk. Citizens in BPL category could be issued phones free, with the cost borne by the state. The remainder could pay for the same in interest-free EMIs, and even sponsor devices for the BPL category in their workspace or environment.

VII. CONCLUSION

The present methodology of conducting elections in phases spread over a month with huge involvement of manpower, machinery and finances is archaic and certainly not in keeping with the advancement in Information & Communication Technology. Voting from homes over a secure mobile would not only mitigate the shortcomings of the present system but also encourage more people to vote. Voting will no longer disrupt day to day functioning at the level of the individual or the state. The development of the concept of voting through mobiles needs to keep all other election reforms under consideration, in view. It needs to form part of a comprehensive plan to make Indian elections inexpensive, secure, voter-friendly and devoid of malpractices.

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