The Use of Information Technology in Electoral Systems

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Abstract. This article puts forward the best uses of information technology (IT) in the key activities of an electoral system in the light of extant literature in this field. The electoral system has been divided into twelve major components where the casting of the vote has been proposed to be the central part of the system while the remaining eleven components have been proposed to be the ancillary components of the system. The proposed uses of IT have universal applicability irrespective of the type of electoral system adopted in a particular country. The issue of the application of IT in the components of the electoral system has been examined against six dimensions, viz., the burning desideratum, key role of IT, choosing the most viable IT solution, how the IT Solution will address the desideratum, key risk factors associated with the IT solution and key risk mitigation strategy.

Keywords—components of electoral system; factors and benefits of IT integration; the burning desideratum; most viable IT solution; risk factors; risk mitigation strategy

INTRODUCTION

Although political parties around the world have made great strides in using Information Technology (IT) mainly for election campaign [1], [2], [3], [4] and [5], the potential of IT is still to be harnessed by the Election Management Bodies (EMBs) around the world [6]. While Governments and electorates are grappling with how to embrace the digital age and its benefits [6], the sheer point of fact is that EMBs around the world have so far been able to adopt successfully only the database systems and geographical information systems [7]. [6] maintains that no industry has escaped the impact of the technological revolution, yet elections remain an outlier, particularly the casting and counting activities of the electoral system. Thus, there is still a long way to go to fully reap the benefit of IT in the electoral system by the EMBs. This article has discussed how EMBs can use IT in the major components of an electoral system.

[8] maintains that there are a number of different technology systems that can be used for electoral purposes and the power of technology can be amplified if these systems are integrated together and compatible with each other. This implies that a piecemeal solution approach to the use of IT in the electoral system will be a bane rather than a boon for the democracies around the world. Rather, a systemic and holistic approach [8] needs to be adopted in this regard. With a view to ensuring a holistic and systemic approach for using IT in the electoral system, this article has tried to tie the major components of an electoral system along some common threads. These are the burning
desideratum, key role of IT, choosing the most viable IT solution, how the IT solution will address the desideratum, key risk factor associated with the IT solution and key risk mitigation strategy.

ELECTORAL SYSTEM & ITS COMPONENTS

[9] has mentioned 12 types of electoral systems broadly classified into four groups and are based on “how closely they translate national votes won into legislative seats won, that is, how proportional they are.” However, these classifications do not have much dissimilarity in terms of the components or activities in the system [10]. They differ only in the electoral process. The components of the electoral system are age old and have not changed across the electoral systems [11].

In order to successfully integrate IT with the electoral system, the age old electoral system must be reformed first because IT as a new and dynamic system cannot be integrated fruitfully with an old and static electoral system. The reform should be on how the candidates are elected. An ideal system could be that the candidates under consideration will undergo a rigorous and detailed evaluation by the voters [12]. Under this system, the whole gamut of electoral system should be considered as a flower, where the core task is at the center of the flower and the ancillary activities are like petals. The core activity or component of an electoral system is the casting of vote. All other activities are deemed as ancillary activities. These ancillary activities will revolve around the core activity as is depicted below.

The main thrust in integration of IT will be towards the core activities and the ancillary activities will be following the IT integration of the core activity and must be compatible with that. The core component of the electoral system, i.e., the casting of vote will be online.

FIGURE 1. Core and Major Ancillary Components of an Electoral System
CASTING OF VOTE

The Burning Desideratum

Due to people deems that casting of vote is a hassle, ease of voting should be regarded as the burning desideratum in this regard.

Key Role of IT

IT is supposed to facilitate the voting procedures by providing the voters all sorts convenience, flexibility and ease in using a technology that is easily available, usable and readily accessible by them.

Choosing the Most Viable IT Solution

Today, people have become more mobile than they were before. People have become busier like a beaver than ever before. People do not have much time to come to the polling centers to cast their vote. They do not have much time to listen or read to the election campaign. They do not want to occupy their memory with the election manifesto and the qualifications of candidates and then go to the polling center to cast their vote. Moreover, the untoward incidents associated with voting like bogus voting, undue exercise of influence and muscle power and terrorism have compelled the people to keep themselves away from the polling centers. Considering these facts, the obsolete idea of manual voting should be discarded by the EMBs. They must design an IT solution that helps the voters to cast their vote conveniently and flexibly. The IT solution must allow the voters to vote from any place, anywhere, anytime. Even, internet-based voting cannot ensure that convenience and flexibility. Thus, voting through a mobile phone is the most viable alternative as has been suggested by [15].

How the IT Solution Will Address the Desideratum

The EMBs can provide Subscriber Identification Module (SIM) cards with a mobile phone (if possible) to all the registered voters. They will make the voting software available to all the citizens, which might be built-in in the SIM cards. The citizens will be given a time frame within which they need to cast their vote. The software will be designed in a way that allows the voters to proceed systematically and helps them to take informed decisions over a candidate. This may be done by making the voters aware of the criteria to be used to evaluate a candidate through the first window, then giving the information on the status of each of the candidates under consideration against each criterion in the second window and then the radio buttons for choosing the scores of each candidate in the third window. For more convenience, voice activated features can be added to the software. The language of the software must be in the vernacular of the voters.

Key Risk Factor Associated with the IT Solution

Jeopardizing of security should be regarded as the most important risk factor while using the mobile technology in the casting of vote [15]. Another risk factor should be the data protection and privacy of personal information [16].

Key Risk Mitigation Strategy

[17] has rightly said that “the most important factor may not be the actual risk involved but the attitudes of citizens toward that risk”. Thus, public attitude toward this risk must be managed by making them aware of how to avoid that risk. However, this is not sufficient. Some technical measures also need to be taken to avoid this risk. [15] has suggested measures like subscriber’s identity confidentiality, subscriber identity authentication, user data confidentiality on physical connections, connectionless user data confidentiality, signaling information element confidentiality for mitigating this risk. These measures could be implemented by installing a verification system using
a combination of voice/speech recognition and biometric verification. The EMBs must be bound by law for unauthorized use of the data and personal information of the voters. They must compensate for the loss incurred to the person due to the negligence or crime of the EMB officials.

CONSTITUENCY DELIMITATION

The Burning Desideratum

Controversy over the constituency boundaries [9] should be regarded as the burning desideratum in this regard.

Key Role of IT

IT can be used to conduct a digital survey with the help of satellite, which will also help in downloading data and pictures with accuracy of latitude and longitude.

Choosing the Most Viable IT Solution

Although there are various options available ranging from cheap Google Maps data to highly expensive Environmental Systems Research Institute (ESRI) GIS data [18] to using own satellites, the choice of the best depends on the involvement of money as well as the gravity of the issue and its consequences on other activities particularly the core activity of election. However, the use of satellite technology is the only viable alternative and the option varies as to the expense associated with the source of data.

How the IT Solution Will Address the Desideratum

The satellite data will help to specify the boundary limit by providing the exact latitudes and longitudes of each constituency with much more accuracy than any other form of survey.

Key Risk Factor Associated with the IT Solution

Lack of proper education of the stakeholders that will enable them to understand the satellite data may render the effort as futile.

Key Risk Mitigation Strategy

Following the suggestion of [17], the stakeholders need to be trained and educated on the reading and interpretation of satellite data along with basic knowledge of physical geography.

PREPARATION, MAINTENANCE AND REVISION OF ELECTORAL ROLLS

The Burning Desideratum

Completeness and accuracy of the electoral roll [6] should be regarded as the burning desideratum in this regard.
Key Role of IT

IT can be used not only to prepare a complete and accurate electoral role but also to maintain and revise it. It can also be used to verify the data regarding the voters.

Choosing the Most Viable IT Solution

If a SIM card is provided to every voter, it will ensure almost 100% accuracy and completeness because the SIM cards will be registered before distributing them to the voters. It will also ensure biometric verification. Electoral rolls prepared by going from door to door will entail deployment of huge manpower and will increase cost. Because using SIM cards can retrieve records from the previous data of the voters who already have their own personal SIM cards, it will save time as well. Thus, using SIM cards is the only viable solution in this regard.

How the IT Solution Will Address the Desideratum

Using SIM cards will be preceded by rigorous process of genuine identification of voters including biometric verification. Once the SIM cards are registered, the IT will facilitate the preparation of electoral rolls with the help of database management software. Voter registration can also be completed using SIM cards. This can be done by voter’s SMS request to register and accepting the request using automated registration system. Periodical maintenance and revision is also possible in this system by checking the active SIM cards.

Key Risk Factor Associated with the IT Solution

Data entry errors [6] in preparing, maintaining and revising electoral rolls may render the whole effort futile and hence should be regarded as the most important risk in this regard.

Key Risk Mitigation Strategy

This risk can be mitigated through double-blind data entry system and high technology voter registration (VR) solution.

NOTIFICATION, SCRUTINY AND WITHDRAWALS

The Burning Desideratum

Evidence-based decision-making in a collaborative process to enhance credibility and fostering trust [6] should be regarded as the burning desideratum regarding notification and withdrawals. In the case of scrutiny, insufficient scrutiny [6] should be regarded as the burning desideratum.

Key Role of IT

IT will ensure the effectiveness of the collaborative process and will facilitate the storage of evidences and retrieval of evidences for future decision making.

Choosing the Most Viable IT Solution

Broadcast of messages through SIM cards in this regard will not serve the purpose of evidence based and collaborative process. Using other IT solutions, e.g., emails can also suffer from similar weaknesses. Use of social media like Facebook etc. might have the embedded features of Evidence-based decision-making in a collaborative
process. Thus, this seems to be the most viable solution in this regard. Seamless integration is also possible with the SIM cards through a push and pull technology. Facebook also allows scrutiny through exhibition [19].

**How the IT Solution Will Address the Desideratum**

Evidences based on which decisions regarding notifications and withdrawals are done will be shared in the social media to ensure transparency. Sufficient scrutiny is possible through display, inspection, claims and objections, etc. [19].

**Key Risk Factor Associated with the IT Solution**

Key risk factors include the possibility of deletion of data due to human error, machine breakdown or natural calamities. There may also be risk of subversive activities.

**Key Risk Mitigation Strategy**

A paper or physical backup for redundancy and auditing purpose [6] may work well in this regard.

**REGISTRATION OF AND RECOGNITION TO POLITICAL PARTIES**

**The Burning Desideratum**

[8] maintains that the task of preparing complex reports and lengthy lists of members may be burdensome, deterring some parties from registering. This should be deemed as the burning desideratum in registering political parties. In respect of recognition to political parties, “continuous review of the status based on their performance at the polls” is considered as a desideratum [20].

**Key Role of IT**

IT should help in reducing the burden and simplify in preparing the reports and lists. The process of continuous reviewing can be expedited and streamlined with the help of IT.

**Choosing the Most Viable IT Solution**

In choosing the most viable solution, there must be a trade-off between time and cost. If traditional IT solutions are used, it will take not only time but also human effort to process the reports and lists. On the other hand, state of the art IT solutions is expensive but saves time and effort. Because the desideratum is concerned about reducing burden and simplifying the job, it should use state of the art IT solutions instead of traditional ones. For the purpose of continuous review, no general software will serve the purpose. So, the only alternative is the use of tailor-made software.

**How the IT Solution Will Address the Desideratum**

This is not a matter of hardware solution. It is all about using the appropriate software. Nowadays, voice activated word processors can help to type lengthy lists and prepare smart reports with an ace of time and effort. Tailor-made software will automatically review the performance of the candidates based on the given inputs. The inputs are generated from the vote casting data of all the SIM cards.
Key Risk Factor Associated with the IT Solution

For lists and reports, IT may induce political parties to provide detailed but impertinent information and may result in information glut [21]. For continuous review, the risk lies with the concurrent adaptability of technology with the changing review criteria.

Key Risk Mitigation Strategy

Providing objective guidelines of preparing reports and list may mitigate the risk of information glut. Technical features and capability of current technology must be reviewed first before changing the review criteria.

ALLOTMENT OF ELECTION SYMBOLS

The Burning Desideratum

A change from the symbol-based voting towards a more detailed evaluation-based voting [12] should be regarded as the burning desideratum in this regard.

Key Role of IT

The time and complexity involved in evaluating a candidate will be reduced through the use of IT.

Choosing the Most Viable IT Solution

There is various software available in the market that facilitates the task of internet based online survey. Survey monkey and Microsoft Silverlight are two of the most notable software. However, since they are in English and specially suitable and convenient for computer based system, development of a new software seems to be the only viable solution. However, that software must be in the vernacular of the voters and must be designed considering the suitability and convenience of the users of mobile based systems.

How the IT Solution Will Address the Desideratum

Change involves resistance [22]. A user-friendly interface in the voters’ vernacular and suitable and convenient use on mobile devices will help to neutralize the resistance and will ensure smooth transition from the symbol-based system to evaluation-based system.

Key Risk Factor Associated with the IT Solution

It may take time for the voters to get habituated with the system. This may delay the implementation of the new system.

Key Risk Mitigation Strategy

In addition to providing intensive and wide training, in-built demo software, frequent advertisement showing the way to operate the software and free YouTube movies may help in quick assimilation of the techniques of using the software.
THE APPOINTMENT OF PRESIDING AND RETURNING OFFICERS

The Burning Desideratum

Online casting of vote will make the traditional functions of the presiding and returning officers as useless. Hence, the burning desideratum should be to find alternative terms of reference for the appointment of presiding and returning officers in an IT-enabled electoral system.

Key Role of IT

IT will change the nature of job of the presiding and returning officers. Instead of performing their duties using traditional manual methods, they will apply IT in discharging their duties.

Choosing the Most Viable IT Solution

The tasks of the presiding and returning officers will be performed automatically using software. Their main job will be monitoring whether all the voters have voted online.

How the IT Solution Will Address the Desideratum

A tailor-made program will be necessary in this regard, where those officers will work themselves and monitor the activities relating to their jurisdictions.

Key Risk Factor Associated with the IT Solution

Unscrupulous behavior and possible collusion among the presiding officers, returning officers and IT staffs responsible for operating the system may pose threat to the proper functioning of the whole system.

Key Risk Mitigation Strategy

Constant transparent monitoring of the activities of presiding officers, returning officers and IT staffs by a variety of stakeholders.

ELECTION SUPERVISION

The Burning Desideratum

Supervision of IT related activities instead of traditional activities should be regarded as the burning desideratum in this regard.

Key Role of IT

New supervision software needs to be developed to ensure effective supervision.

Choosing the Most Viable IT Solution

Which software will cater to the supervisory need of the EMBs will depend on the readiness level of the EMBs. A state of the art IT educated and dynamic workforce within an EMB will choose the most sophisticated software with
all the features built-in. Because many features will not be available in readymade software, tech-savvy EMBs will choose tailor-made software.

**How the IT Solution Will Address the Desideratum**

IT will facilitate the task of supervision by automatically monitoring and sensing the activities of voters and other stakeholders to an election. A system of supervision about who is doing what and an instant sensing system will render the supervision fruitful.

**Key Risk Factor Associated with the IT Solution**

A mismatch between technology and level of readiness of EMBs will render the supervision effort as futile.

**Key Risk Mitigation Strategy**

An assessment of the level of readiness of the EMBs should be carried out first before implementing the IT solution. After conducting the assessment, training programs need to be designed to fill up the deficiencies in knowledge, skills and attitude of the EMB staffs.

**VOTE COUNTING AND ANNOUNCEMENT OF RESULTN**

**The Burning Desideratum**

Ensuring speed and accuracy in vote counting [6] as well as timeliness, transparency, auditability and robustness [19] and integrity [8] should be considered as the burning desideratum in this regard.

**Key Role of IT**

IT will help both with hardware and software to address the desiderata.

**Choosing the Most Viable IT Solution**

An IT solution that meets all the criteria mentioned in the desiderata is the most viable IT solution. However, accommodating all the desired features will certainly increase the cost of hardware and software. Thus, the EMBs must conduct a cost-benefit analysis [8] before choosing the most viable IT solution.

**How the IT Solution Will Address the Desideratum**

Speed is a matter of hardware and all other benefits of the desired features can be derived from suitable software. The software could take the form of a result management system [8].

**Key Risk Factor Associated with the IT Solution**

For vote counting, counting speed with related elimination of human mistakes might be offset by lack of transparency and limited understanding of counting procedure [19]. For result announcement, creation of exaggerated expectation might be the key risk factor [8].
Key Risk Mitigation Strategy

The element of auditing must be introduced by designing and implementing an auditing system for ensuring transparency as well as managed transparency [19]. To enhance understanding, training must be imparted to all the stakeholders. Formulation and implementation of realistic plans [8] as well as announcement of interim results [8] might mitigate the risk associated with result announcement.

VOTER EDUCATION

The Burning Desideratum

Educating voters within stipulated time [9] should be considered as the burning desideratum in this regard.

Key Role of IT

IT can expedite the process of voter education by offering a range of learning methods and automatically engaging the voters in learning.

Choosing the Most Viable IT Solution

Although IT can be used in every medium of voter education, they cannot guarantee that voters will be spontaneously engaged in learning and will learn within the stipulated time. For example, educating through media, printed materials, arts and culture, face to face interaction, information centers, hotline, direct mail, telephone canvassing, commercial advertising, distance learning techniques and digital materials [8] cannot ensure automatic participation in the learning. Using SIM cards can solve this problem.

How the IT Solution Will Address the Desideratum

The SIM cards will have built-in text, audio and video learning materials and when the voters will use the SIM cards, they cannot proceed to the next step of casting vote without fully reading, listening or watching the learning materials.

Key Risk Factor Associated with the IT Solution

For those voters who are deaf, blind or illiterate will find it difficult to learn.

Key Risk Mitigation Strategy

For illiterate voters, videos and audios can be the option. For blind voters, audios and the loud utterance of text should be used as the option. For deaf voters, videos along with special language with gestures and postures interpretable by the deaf voters will be the option.
LIAISON WITH MEDIA

The Burning Desideratum

In the traditional electoral system, the relationships of EMBs to media are as communicator, news story and regulator [8]. The media act as watchdog, campaign platform, and open forum for debate and discussion and public educator [8]. It has already been in use in all of these cases. While the roles of the media are likely to remain unchanged, the burning desideratum should be about redefining the relationship between the EMB and the media in this digital age.

Key Role of IT

IT can play a significant role in redefining the relationship between EMBs and media by transforming the way cooperation takes place between the two.

Choosing the Most Viable IT Solution

Technologies that may transform the way of cooperation between the two may include interactive technologies that are also transparent. Some examples can be the joint ownership of print and electronic media, joint hosting of websites etc. The EMBs may go for cooperation with the most important media organizations.

How the IT Solution Will Address the Desideratum

Joint ownership of print and electronic media and joint hosting of website will improve the image of EMBs and the concerned media organizations before the public. It will also increase the credibility and transparency of the actions by EMBs. Simultaneous news release in multiple media and similarity of contents will ensure that genuine and trustworthy news are being delivered to the stakeholders.

Key Risk Factor Associated with the IT Solution

There is a risk of deadlock in the case of a misunderstanding and subsequent non-cooperation between EMBs and the media. This may result in public suffering.

Key Risk Mitigation Strategy

Use of multiple media can mitigate the risk because it is highly unlikely that an EMB will engage in non-cooperation or misunderstanding with all the media at a given point of time.

SETTLING ELECTION DISPUTES

The Burning Desideratum

Securing of evidence and developing the mechanisms by which disputes are to be evaluated and resolved should be considered as the burning desideratum in this regard [7].
Key Role of IT

IT in terms of hardware and software can help to evaluate and resolve disputes by securing evidence and developing mechanisms. Hardware will facilitate the securing mechanism of evidence and software in terms of a system can develop mechanisms for evaluating and resolving disputes.

Choosing the Most Viable IT Solution

Other devices like desktop, laptop, pad etc. cannot be used as a reliable storage device for securing evidence because the storage drive on those devices might be tempered and there is a risk of the data being deleted from the hard drive. Thus, the only viable alternative is to use the SIM card. The SIM card will also be used for an in-built software system for evaluating and resolving disputes. Thus, in addition to providing transparency as to how the system works, it also provides an efficient interface for dispute evaluation and resolution.

How the IT Solution Will Address the Desideratum

A strong memory will be embedded in the SIM card. This memory will have simultaneous multiple backup at multiple locations. All the evidence will be recorded real time.

Key Risk Factor Associated with the IT Solution

Users may not understand how the system works and may not use the system properly. Clandestine activities may not produce any evidence.

Key Risk Mitigation Strategy

Training as well as in-built demo of how the system works might mitigate the risk of not understanding the system. In order to prevent the commitment of clandestine activities, a system should be developed with appropriate legal base so that no dispute without evidence can be entertained.

ASSESSMENT OF THE ROLE OF IMPORTANT FACTORS IN FACILITATING OR IMPEDING THE INTEGRATION OF IT IN THE PROPOSED MODERN ELECTORAL SYSTEM

Electoral Laws

Current electoral laws do not incorporate the IT related matters in detail. Moreover, adoption of a modern electoral system will entail the change of law accordingly. Thus, at present, it is an impeding factor for integration of IT with the proposed electoral system.

Election Method

Current election methods need to be changed in order to embrace IT. Current election methods do not have much state of the art IT features. Moreover, introduction of a modern electoral system will entail change in the election method. Overall, current election method is also an impeding factor for integration of IT with the proposed electoral system.
Surprisingly, the culture is a facilitating factor for integration of IT with the proposed electoral system. Because using mobile phones have become a widespread culture among the people from all walks of life, using this technology in the electoral system will succeed because of the congenial culture.

**Level of Education**

Use of voters’ vernacular and a user-friendly operating system does not require the voters to be highly educated to operate the system. Most mobile users have the required skill and educational qualifications to work in the proposed system. Thus, it is neither an impeding nor a facilitating factor for integration of IT with the proposed electoral system.

**Political Consensus**

Reaching a political consensus on any polemic issue is really a challenge. However, whether this issue will become polemic in the political arena will be understood after coining the idea. However, naturally, there should be an opposition to the proposed system and hence is regarded as an impeding factor for integration of IT with the proposed electoral system.

**User Friendliness of Technology**

Mobile phones and SIM cards are deemed as the most user-friendly device in the world. Hence, this is a facilitating factor for integration of IT with the proposed electoral system.

**Cost Effectiveness**

SIM and mobile phone technologies are still nascent and hence it will take at least another fifty years for them to become obsolete. Hence, investment in this will be worthwhile. Thus, in terms of cost effectiveness, this is a facilitating factor for integration of IT with the proposed electoral system.

**Availability**

The devices, i.e., the SIM cards and mobile phones are widely available and hence can be regarded as a facilitating factor for integration of IT with the proposed electoral system.

**Reusability**

The devices themselves are reusable and so are the data in the systems. The data in the system can be imported or exported in any form and in any software. Hence, this is a facilitating factor for integration of IT with the proposed electoral system.

**Sustainability**

Because of congenial culture and mass use of the technology, it is regarded as a sustainable solution and hence is a facilitating factor for integration of IT with the proposed electoral system.
Mobile phones and SIM cards are more portable than any other type of device. Hence, this is a facilitating factor for integration of IT with the proposed electoral system.

**BENEFITS OF INTEGRATING PROPOSED IT SYSTEM WITH THE PROPOSED ELECTORAL SYSTEM**

**Improvement of Electoral System**

No doubt, the electoral system and its components will be drastically improved using the proposed system. The proposed system and the proposed integration model will help seamless integration of technologies among the components of the electoral system. Unlike the existing system, where the components tend to operate in isolation from each other, the proposed system will improve the overall system by integrating the components with each other because of the flower-like concept of the electoral system.

**Cost Reduction of Electoral Process**

In the proposed new system, many activities of the traditional system will be eliminated. This will save cost. The only major investment will be in the mobile phones and SIM cards. Because of the sustainability of the solution, this will also reduce cost of the electoral process in the long run.

**Increase of Political Transparency**

Political parties will become transparent in all respects because of instant sensing mechanism of any deviation from commitment or any deviant behavior.

**CONCLUSION**

[9] rightly pointed out that “to be successful, electoral system design process must build understanding and trust – not just among politicians and election administrators, but among civil society, organizations, among commentators and above all among citizens of a country undergoing democratic reform. Electoral systems must be designed not only to work under current situations but also to accommodate future changes in attitudes and behavior as electoral incentives change. They can contribute to the development of stable democracy or they can be a major stumbling block to it.” This statement aptly appreciates the role of IT in the electoral system. IT can embed the elements of trust and understanding among the stakeholders given that the quality of the security is of top-notch in all respects. Current electoral systems as well as their components and the electoral laws are yet to incorporate the state of the art IT integration mechanism in them. Thus, they are now working as stumbling blocks to the development of democracy in countries around the world. Thus, electoral systems around the world have a long way to go in accommodating the changes in the technology-based attitudes and behavior of the stakeholders.

Rome was not built in a day. Thus, the integration of IT and the electoral system will take time. Authorities must engage themselves in a change management process along all the components of the electoral system. The change should follow the eight stages prescribed by John P. Kotter [23]. However, the existing electoral system will have to be reformed for reaping the benefit of IT use in the electoral system. The core and the ancillary components of the electoral system may use different technologies depending on their objectives. Thus, a seamless integration of all the technologies in all the components will become necessary. It should be borne in mind that a global body on election management like an organ of the United Nations must exist in order to announce and authorize new standards of technologies to be used in electoral system.
ACKNOWLEDGMENTS

The author is thankful to the Election Commission, Bangladesh for providing the framework for writing this article.

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