

E-Voting Within The E-Government System

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Abstract— With a rapid growth in computer networks, many people can access the network through the Internet and therefore an electronic voting can be a viable alternative for conducting an election, the voting system is part E-government. Electronic voting system must attempt to achieve at least the same level of security as ordinary elections, E-voting for a general election. E-Voting system employs cryptographic techniques to overcome the security issues in the election process. This system allows people to participate in decision making and its gives an overview of the strategy and technical side of the proposed e-voting system. Moreover, this paper shows growth of the Internet and online voting appears to be a logical alternative to traditional elections. Much attention has been paid to the administrative part of an electronic voting system that supports the actors of the system in e-government. We believe that e-voting in e-government can reduce human error in voting process by providing easy-to-use user interface.

Key-Words: — Electronic Voting , Applications of E-Government, ADDIE Model .

1.Introduction

An electronic vote system (e-voting) could be a system with the election information recorded, held on and processed mainly as digital info.

A fundamental feature of democracy which cuts across all differences of individuals is election. Democracy encourages freedom under the canopy of law, that people might act and categorize themselves as they select. Not only does this give people a chance to choose their leaders, but also let them freely express their opinions on problems. As a response to the 1948 Universal Declaration of Human Rights which stresses the necessity of free elections, peoples hope for modern and improved vote techniques in elections within the twenty first century [1]. Voting, which was mainly manual, has with the passage of time been influenced by info Technology, with debates arising concerning the connotation or not, of processed on-line vote [2] [3].

Electronic option has been considered to be associate economical and value effective various complement of the classic option procedure, additionally as the simplest way to attract specific sectors of individuals, like young electors, to take part [2]. However, in parallel to their initial interest, state authorities are involved, and wish for justification, on the compliance of electronic option systems with the present legal framework. On these lines, it's rather usual to find the “requirements” of

associate electronic electoral systems just as pointers to suit the legislation governing general elections.

Voting on paper is incredibly known to all countries. The difficulties facing this traditional voting system is that it makes the investigation of the votes a long cumbersome process and ballot papers have to be taken to investigation centers, then sorted by hand. Although there's no plausible reason to be exceptionally fast-sequent government formation will take weeks or months- the speed of investigating the votes is what motivates the electronic pick mechanisms. Results may be given a short time after closing the polling stations. Searching for votes on paper requires a lot of human activity and the possibilities for mistakes area unit are quite high [4].

Based on the mentioned problems, this study aims to supply a purposeful style and illustration for e-voting content to cut back the prices of elections, speed up the count procedure and improve the voters' turnout. the target to the present analysis to style e-voting application ,to evaluate the usability of the planned paradigm and to eliminate spoiled votes. The scope to the analysis to be mentioned makes up a comparatively tiny a part of the full election method. From a technical viewpoint the elections area unit created of the subsequent components:

calling for elections,
registration of candidates,

preparation of polling list,
voting (a set of that is e-voting)
Vote Counting.

The prototyping approach are progressing to be tailored to implement the necessity supported the employment of electronic text pre-processing language and MySQL. the importance Study Electronic choose could also be created completely accessible for persons with disabilities. the foremost contribution of electronic decide and lots of specifically of internet-based decide systems is that the support they supply for “voter mobility”, allowing them to participate in degree election from any location that provides net access this the look of a decide protocol that protects the integrity, generality, equality, freedom, secrecy and fairness of the election technique is feasible.

2. History of E-voting System Electronic

One of the first countries in the world to adopt e-voting was Belgium. Following associate degree initiative from the Minister of the interior in 1989, the Federal Parliament approved a law 1 in July 1991 to start testing 2 totally different e-voting systems in 2 electoral cantons [5] for the parliamentary and provincial elections of Nov. 1991. Then initial expertise, a system providing a magnetic card was chosen to continue with e-voting, and a law 4 was passed in 1994 establishing the final framework for e-voting in the country. E-voting was expanded throughout Belgium in 2 waves: in 1994 one.4 million voters participated (20% of the voters) and in 1999 over three.2 million5 voters (44% of the voters) forged associate degree e-vote [6].

Although the growth of e-voting to the rest of the country had been officially planned, no more extension has taken place since 1999, and also the same municipalities that piloted the program still employ it today 6. E-voting caused some conflict in Belgium for many years. Whereas the technical performance of the e-voting techniques wouldn't appear to be basically doubted, some institution officers, particularly of the French speaking aspect, and civic cluster activists, have expressed issues regarding e-voting. The chief focus of their criticism mainly comes from worry about relevancy and the scarcity of effective public oversight of e-voting. We will so realize some contentious incidents 7, opposition from some society sectors 8, and issues stated by some members of the Parliament and Senates towards e-voting. With reference to those parliamentary controversies, the OSCE had previously discovered through associate OSCE expert visit on new vote technologies that apprehension “appears to be the main

reason why the use of e-voting in Belgium has not been extended on the far side. The present four hundred and forty yards of the voters victimize it since 1999. Some of the actors met complained that small or no discussion was held once the experiment began, and also the e-voting system has never been the object of a national analysis discussion [5].

3. E-Voting System Architecture

There are four stages in E-Voting. they're electoral Registration, Candidate Registration, ballot and investigation. the subsequent sections can describe the protocols and events in every of the four stages. before these stages, all entities key pairs apart from voters ought to be generated[8].

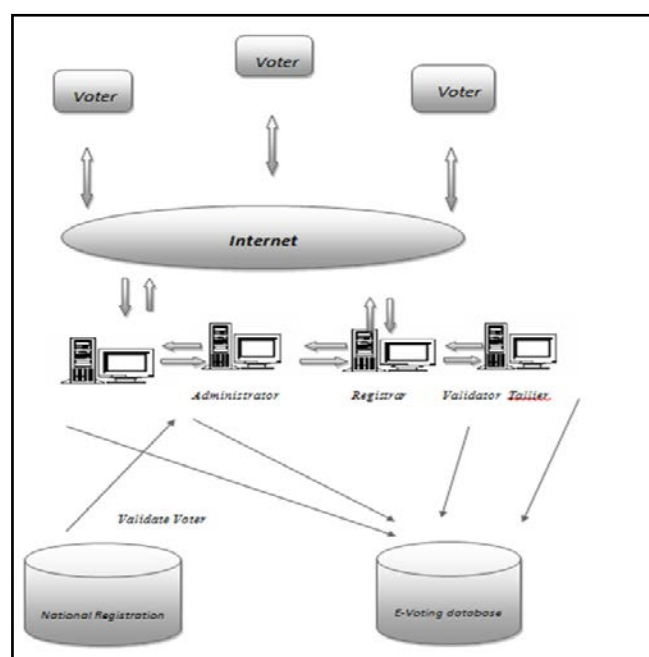


Fig.1. E-Voting System Architecture

5. Types of voting systems

Voting may be a technique by that teams of individuals create choices. These choices may be political, social or public. vote also can be wont to choose from troublesome plans of actions or to make your mind up United Nations agency is best eligible to be awarded a prize. vote will so be outlined as a method that enables a gaggle of people to settle on between a numbers of choices[9]. Most vote systems square measure supported the construct of school of thought or plurality. For example, in an election, a candidate with a plurality

receives a lot of votes than the other candidate, however doesn't essentially receive the bulk of the full votes solid. 5 differing types of vote systems is also identified. These are:

- Paper-Based vote Systems
- Direct-Recording Electronic (DRE) vote Systems
- Public Network DRE vote Systems
- Precinct Count vote Systems
- Central Count vote Systems

6.Methodology and GUI

the main method that was used in analysis and designing the proposed e-voting prototype. The present this study evaluated based on the adaptation of Analysis, Design, Development, Implementation, and Evaluation (ADDIE) from[10] into the research process.

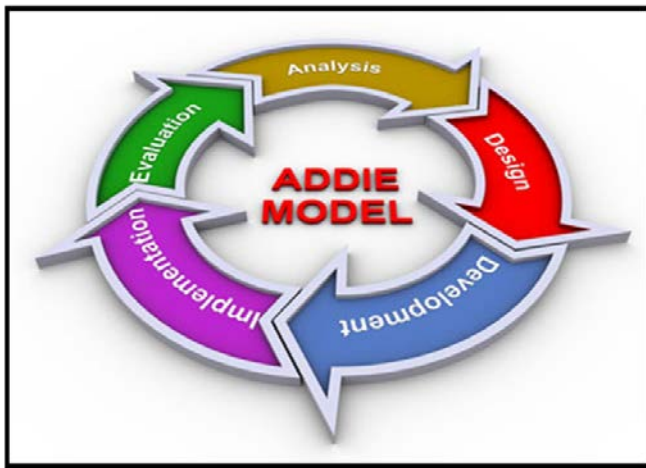


Fig. 2.ADDIE Model

6.1Analysis

Analysis refer to the modeling process of prototype requirements based on the Admin and user in application . The output of this phase is use case diagram that will be generated by following the steps provided from UML Language in Figure 3, this is explain operations to implementation in application.

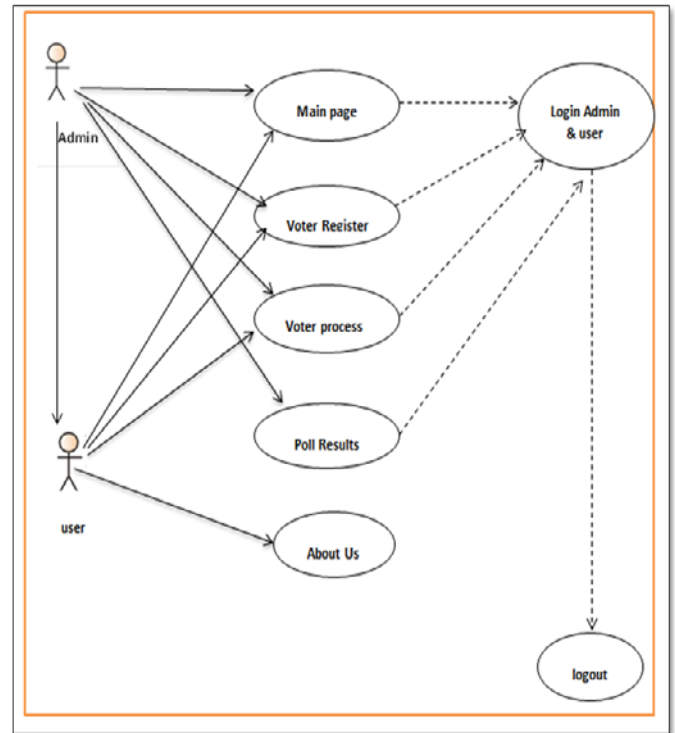


Fig.3. Use Case Diagram

6.2 Design

In this phase every screen of application was designed the use case activity diagram Figure 4 for showing use relation with the prototype .

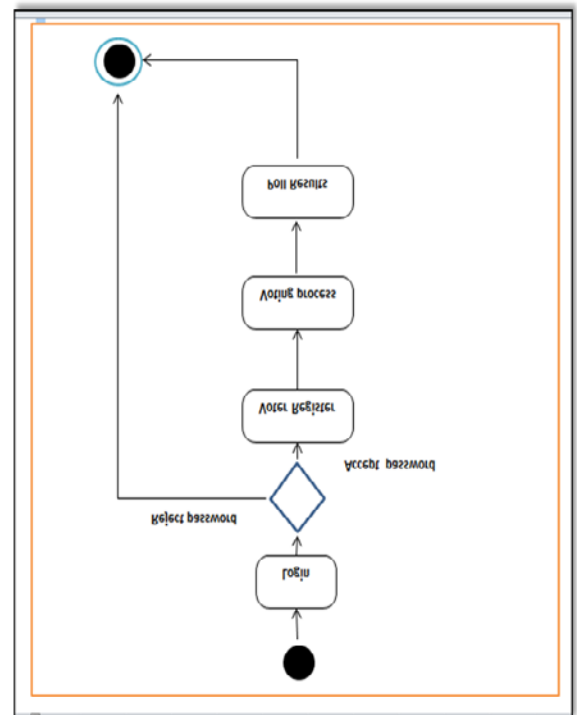


Figure 4 :Use Case Activity

6.3 Development

This phase refers to coding process after designing the prototype user interface . Table 1 present the development hardware and software requirements in prototype e-voting.

TABLE 1 Hardware And Software Requirements

No.	Tools	Objectives
1-	pc	Use to work from project
2-	Wamp Server	Software to execute website.
3-	Mysql , php languages	Design the system database and to code the system functionalities.
4-	Html,css languages	Design interface of the website.

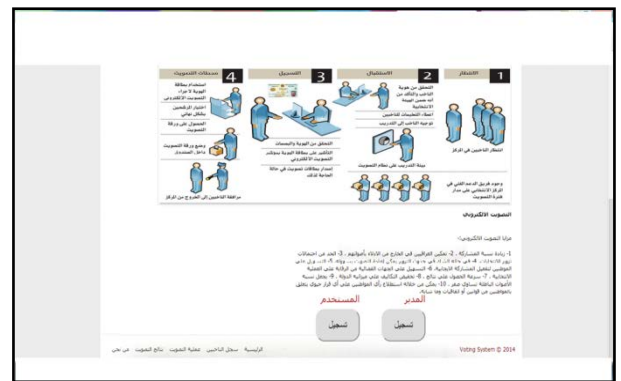


Fig .6. Main menu and Logout

6.4 Running

In this phase explain the interfaces for the system and we use JBuilder5 program. This program may speed up the event of this technique as a result of its facilities to draw forms and to feature library simply..

7.Access Control Module

7.1. Login to the system

Below is the first login page in the system:



Fig .7. Register Menu



Figure 5. Login system



Fig .8. vote position Menu

System will prompt error if invalid username or incorrect password has been entered Based on the login information, system will displayed the relevant user interface to the user.

7.2Main menu and Logout

System will display different interface main menu based on user category (Admin, user). Below illustrated the view of different main menu for each of the category.

8.Result

The purpose of the establishment of the electronic poll is to facilitate the method and sharing by and see how people respond to this system we have by giving it to a number of students and teachers in order to do experimenting with this system to see its efficiency through a series of questions had been put on them by using the Computer System Usability Questionnaire that you're not mentioned in the Appendix A after the answer to these questions and the 19 question we have to count the number of answers by Microsoft Access got the chart that shows the responsiveness of the system.

9.Evaluation

The proposed system was tested by running the system on Internet explorer with a definite server as well as local host server. The user evaluation of the prototype was conducted on 60 students from Al-Technology Universities in capital of Baghdad Iraq with the help of three instructors; each of them was given brief explanation regarding the usage and the user interface of the e-learning system.

Online questionnaire was used to fulfill the evaluation purpose. The respondent's information was collected by the instructors and sent to the research for analyzing. The questionnaire involved two sections; the first section that was captured by the instructors was to indicate the demographic background, while the second one that was provided online was to capture the student's opinion about the proposed system. An online usability test was conducted with all 60 students. The questionnaire which available online is developed .

The obtained result from the table in terms of effectively and efficiency for the systems hawed that most of the participants were highly agreed that using the proposed system was efficiency with mean= 3.43 and STD =1.125. Meanwhile, participants were highly agreed that using the proposed e-voting system was effectively helped them to complete their work comfortably with mean= 3.31 and STD= 1.455. That shows in Q3 and Q5 respectively of Online Questionnaire.

From the other hands, participants' evaluation result towards the usefulness of using e-voting system was the highest among all items. Participant's answers revealed that the proposed e-voting helped them to complete their work easily with mean= 4.00 and STD=.95669, mean=4.03 and STD=.78041. Also, the participants were highly agrees that using the proposed system was likely among them with mean= 3.88 and STD= 1.15115. In addition, the participants found that the service quality of system was very satisfactory with mean=3.85 and STD=.98849. Also, participants were found to be satisfied with quality with mean=3.90 and STD=1.06882.

In statistics and probability theory, Standard Deviation (STD) shows how much variation or "dispersion" exists from the average. A low standard deviation indicates that the data points tend to be very close to the mean; high standard deviation indicates that the data points are spread out over a large range of values.

Table 2. Descriptive statistic for usability questionnaire

	N Statistic	Minimum Statistic	Maximum Statistic	Mean Statistic	Std. Deviation Statistic
Q1	60	1.00	5.00	3.1333	1.39572
Q2	60	1.00	5.00	3.6667	1.05230
Q3	60	1.00	5.00	3.4333	1.12546
Q4	60	1.00	5.00	3.2167	1.29001
Q5	60	1.00	5.00	3.3167	1.45546
Q6	60	1.00	5.00	3.7000	.96199
Q7	60	2.00	5.00	3.5833	1.02992
Q8	60	1.00	5.00	3.3667	1.16396
Q9	60	2.00	5.00	3.8833	1.02662
Q10	60	2.00	5.00	4.0000	.95669
Q11	60	2.00	5.00	4.0333	.78041
Q12	60	1.00	6.00	3.6000	1.26491
Q13	60	1.00	5.00	3.9667	.90135
Q14	60	1.00	5.00	3.9500	.92837
Q15	60	1.00	5.00	3.6333	1.24828
Q16	60	1.00	5.00	3.8667	1.17122
Q17	60	1.00	5.00	3.8833	1.15115
Q18	60	1.00	5.00	3.6833	1.24181
Q19	60	2.00	5.00	3.8500	.98849
Valid N (list wise)	60				

Figure 9 shows evaluated using questionnaires which were answered by voters. A percentage of 61.2 percent and 28.8 percent answered agree and strongly agree respectively of the proposed model. As a conclusion these results above confirm the importance of this study and the possibility of its application in e-government .

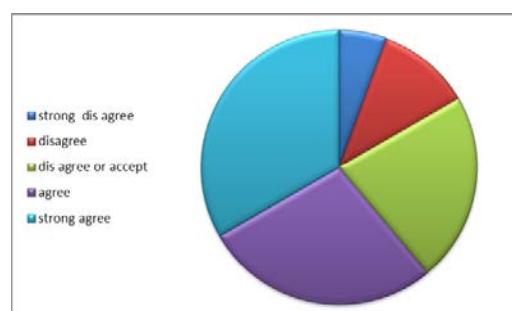


Fig. 9. Result Scale

10. Conclusion




















With the development of the net, on-line voting appears to be cheap, unlike traditional polling and various other view expressing methods. The present study explains planning and designing “E-voting System Electronic” which will support the option method as well as take the safety measures required for fighting fraud and safeguard voter's privacy. However, not much attention has been given to the executive part of Associate in nursing electronic electoral system that supports the actors of the system. This paper shows the responsibilities and privileges of the actors concerned within the electronic option technique. The outline of the role of every actor, at the side of the clear indication of what every actor is expected - and so allowed - to attempt and do with the system, formulate an operational framework that boosts the technological security measures of the system and allows the Iraq to speak concerning “secure electronic voting systems”.

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Appendix A

Usability Online Questionnaire

All Questions	Neither agree Nor disagree	Strongly disagree	Disagree	Agree	Strongly agree
Q1: Overall, I am satisfied with how easy it is to use this system 	1	2	3	4	5
Q2: It was simple to use this system 	1	2	3	4	5
Q3: I can effectively complete my work using this system 	1	2	3	4	5
Q4: I am able to complete my work quickly using this system 	1	2	3	4	5
Q5: I am able to efficiently complete my work using this system 	1	2	3	4	5
Q6: I feel comfortable using this system 	1	2	3	4	5
Q7: It was easy to learn to use this system 	1	2	3	4	5
Q8: I believe I became productive quickly using this system 	1	2	3	4	5
Q9: The system gives error messages that clearly tell me how to fix problems 	1	2	3	4	5
Q10: Whenever I make a mistake using the system, I recover easily and quickly 	1	2	3	4	5
Q11: The information (such as online help, on-screen messages, and other documentation) provided with this system is clear 	1	2	3	4	5
Q12: It is easy to find the information I needed 	1	2	3	4	5
Q13: The information provided for the system is easy to understand 	1	2	3	4	5
Q14: The information is effective in helping me complete the tasks and scenarios 	1	2	3	4	5
Q15: The organization of information on the system screens is clear 	1	2	3	4	5
Q16: The interface of this system is pleasant 	1	2	3	4	5
Q17: I like using the interface of this system 	1	2	3	4	5
Q18: This system has all the functions and capabilities I expect it to have 	1	2	3	4	5
Q19: Overall, I am satisfied with this system 	1	2	3	4	5